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Western Division/Division de l'Ouest
2665 East Mall
Vancouver, B.C. V6T 1W5

Tel/Tél: (604) 224-3221
FAX/Télécopieur: (604) 222-5690

Eastern Division/Division de l'Est
319, rue Franquet
Sainte-Foy, Québec G1P 4R4

Tel/Tél: (418) 659-BOIS (2647)
FAX/Télécopieur: (418) 659-2922

W-1664

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Japan's Value Added Market: Wood Product Attributes and Competition

Competitor Analysis Two

Prepared for and with financial assistance from

Forest Renewal BC

by

C. Gaston
Forintek Canada Corp.

G. Delcourt
Forintek Canada Corp.

D. Cohen
University of British Columbia

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Summary

The objective of this study is to compare wood product attributes demanded to those that can be profitably and competitively supplied to the Japanese market by the BC primary and secondary wood products sector. Specifically, this includes providing market research and an international trade flow analysis to highlight areas of competitive advantage for the BC value-added wood products sector.

This is the third of four reports for this project:

1. Competitor Analysis One
2. Attribute Analysis
3. Competitor Analysis Two
4. Linkage Analysis

The objectives of Competitor Analysis Two were to:

- Offer predicted trade flow for the 1997 base year for comparison with known trade for 4 categories of softwood lumber, four categories of softwood logs and 2 categories of wood panels;
- Offer predicted trade flows for 2002 and 2007;
- Offer example "what-if" scenarios to demonstrate the value of the trade model in assessing the potential competitiveness of identified product groups in the Linkage Analysis (Report No. 4);
- To offer a tool which facilitates the collection of industry knowledge regarding existing and potential competitiveness of BC wood products in the Japanese marketplace.

While this report does offer example what-if scenarios, the objective of this report is primarily to demonstrate how these work. More extensive what-if scenarios are offered in the Linkage Analysis report.

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1 Objective

The overall objectives of this project are broken into three categories:

❑ **The Attribute Analysis**

The objective of the attribute analysis is to develop and implement a methodology for identifying what wood product attributes are being demanded in Japan for a number of wood product categories, as identified by the project steering committee. In addition to identifying attributes or sets of attributes that are driving specifier's purchase decisions, a trade-off analysis is to be performed (for example, what a specifier is willing to give up if price is to be lowered), as well as a market share analysis (what would be the expected market share of a product with a defined combination of attributes).

❑ **The Competitor Analysis**

The objectives of the competitor analysis are broken down into two phases, **with this report detailing the results of phase two** :

Phase One

- record wood product production and trade flow information with as much product detail as possible, for identified global producers and global suppliers
- identify trends over the 1990s
- develop a methodology to incorporate such product detail into a trade flow model, with an initial focus on softwood lumber.
- offer predicted trade flows for a 1997 base year for comparison against known trade.

Phase Two

- fine tune the softwood lumber product categories
- calibrate the model for known trade in 1997
- offer base line projections for the years 2002 and 2007
- offer a scenario analysis
- run a similar analysis for softwood logs and wood panels.

❑ **The Linkage Analysis**

The objectives of the linkage analysis are two fold. The first is identify BC primary and secondary wood products (existing or potential through R&D) that posses the attributes that most closely match those attributes demanded in Japan. The second is to run these products through a number of feasibility checks, including resource and technology availabilities, market access issues, and competitive positioning.

2 Introduction

The BC forest industry has traditionally focussed on producing primary products such as dimension lumber and pulp. Marketing efforts in Japan have demonstrated potential for increasing profitability through a higher willingness to pay as compared to the US for the product. But this is less so the case today due to Japan's weakening Yen and change in building practices. Continued success now requires appropriate market research. While product research is extremely important, it is of limited use if not backed by the marketplace, demonstrating the economic feasibility of moving up the value chain. Further, with the increased availability and interest in substitutes for BC wood products, it is the *attributes* of a wood product that are being demanded today, not necessarily a distinct product. To be competitive in new, value-added markets and to maintain competitiveness in existing markets, it must be determined what attributes are being demanded for specific end-uses and match these to those wood attributes that BC products can best provide. Once these attributes are identified, it is also essential that there be an understanding of who the global competitors are/will be for these opportunities, and the degree of vulnerability for BC producers of wood products to unknown eventualities in the future.

The primary goal of this project is to identify value-added opportunities in Japan where BC wood products have the greatest potential for competitive advantage, sustainability of the resource, and maximizing the number of jobs created per tree. The project offers a powerful tool for secondary and primary producers in their development of product and market strategies, both for the short and the long terms. The project will also provide a common basis for the industry associations' promotional efforts. Finally, the project will provide a foundation to guide the government in trade (for example, facilitating market access), policy (for example, prioritizing silvicultural investments) and research.

The goals of the project are illustrated in Figure 1, showing the linkage of attributes demanded in Japan to those attributes that BC could now or potentially supply in a competitive way.

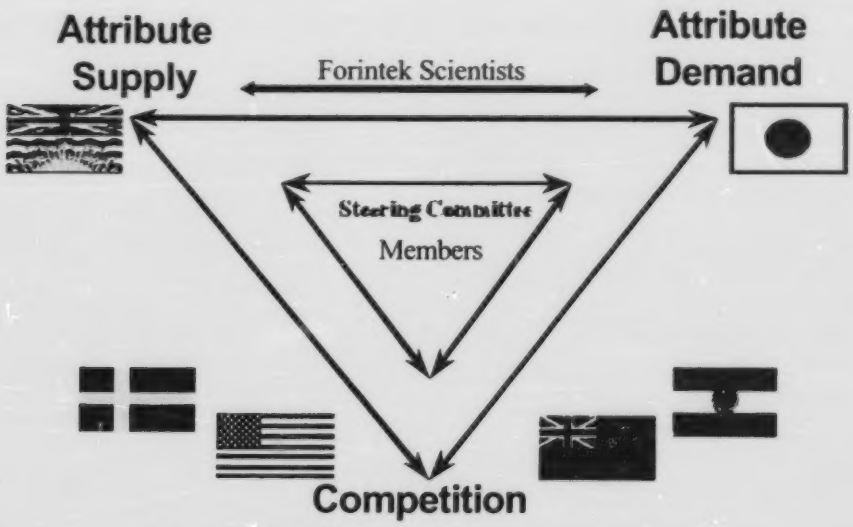


Figure 1 Competitive Linking of Supply and Demand

3 Project Team

C. Gaston	Forintek Canada Corp., Forest Products Market Economist
G. Delcourt	Forintek Canada Corp., Contract Economist
D. Cohen	Associate Professor, Department of Wood Science, University of BC

4 Methods

1) Data Collection and Organization

4.1.1 Production and Trade Flows

The documentation of historical production and trade of wood products serves two important functions. First, it offers a clear picture of who the players are, both the suppliers and the consumers, and how this has changed over recent years. The identification of production and trade trends can be valuable in itself as a marketing tool for BC products. What market share does BC hold in its major markets? How has this changed over time? Have new competitors come into the picture? Has there been a change in what BC's major markets are demanding by wood product end-use?

These trade trends were reported graphically in *Competitor Analysis One* for softwood lumber, and are supplemented with the trends for softwood logs and wood-based panels as an appendix to this report. While it was initially hoped that BC trade would be broken out from the rest of Canada in the final analyses, this proved to not be possible due to data constraints outside of the U.S. and Canada. However, utilization of Canadian data can be interpreted after the fact with knowledge of our exports by province of origin, particularly when referring to the species of softwood lumber. For example, the vast majority of the coastal BC species (Douglas-fir, hem-fir, sitka spruce, yellow cedar, etc.) are shipped to Japan. These are precisely the species that make ip the majority of the appearance grade. As regards the rest of Canada, being primarily SPF from our Boreal forests, the US is the largest market, and this primarily US construction grade.

The second reason for documenting production and trade is to create a data base for subsequent trade modelling, as discussed in *Competitor Analysis One*, and furthered in Section 4.2 of this report.

4.1.2 Categorizing and Reconciling the Trade flow Data

As discussed in *Competitor Analysis One*, the objective of categorizing the trade flow data is to group softwood lumber and logs into "like" baskets. This addresses a very limiting flaw of existing trade-modelling efforts which can be found in the literature, which is to lump all softwood lumber into one big aggregate. This is a flaw as it makes the huge assumption that softwood lumber is a homogeneous commodity—that, in the eyes of the Japanese specifier, sitka spruce from the BC Coast is a *perfect substitute* for New Zealand Radiata pine. As this is obviously not the case, this study had a underlying objective to get away from this assumption and to model trade flows of "like" softwood lumber, one at a time.

The approach taken in this study was to categorize the lumber traded on the basis of price. Four price categories were chosen with the aim of separating out the two levels of "appearance" grade lumber, a Japan

"J" construction grade lumber, and a US construction grade lumber. Initially, an attempt was made to have a utility/econo grade lumber category, but it was not possible to segregate on a suitably low price (i.e., the utility grades were not recoverable on trade data by species).

The final price groupings for softwood lumber and logs utilized on the 1997 base year are shown in Tables 1 and 2, respectively. The differences in price shown reflect a proxy for transportation, etc., used in defining the lumber categories with the relative data sets (e.g. Canada FOB prices as reported by Statistics Canada as compared to Japan C&F prices as reported by the Japan Tariff Association).

Table 1. Price Groupings for Lumber Categories by Location

	Japan	Canada	US (Importer)
#1	US$ 430 +	US$ 390 +	US$ 400 +
#2	US$ 340 - 429	US$ 300 - 389	US$ 310 - 399
#3	US$ 240 - 339	US$ 200 - 299	US$ 210 - 309
#4	US$ 239 or less	US$ 199 or less	US$ 209 or less

Table 2. Price Groupings for Log Categories by Location

	Japan	Canada	US (Importer)
#1	US$ 340 +	US$ 300 +	US$ 310 +
#2	US$ 240 - 339	US$ 200 - 299	US$ 210 - 309
#3	US$ 140 - 239	US$ 100 - 199	US$ 110 - 209
#4	US$ 139 or less	US$ 99 or less	US$ 109 or less

Table 3 illustrates the example of Canadian exports to Japan with the resulting lumber category breakdowns used for the trade model. As was noted in *Competitor Analysis One*, these data were reconciled to agree with the Japan import data, recognizing that Statistics Canada reports cubic metres of planed, kiln dried lumber in nominal dimensions (e.g. 2" x 4"), while the Japan Tariff Association reports such lumber volumes in real dimensions (1 ½" x 3 ½").

Similar data reconciliation were performed for softwood logs to reflect the differences in volume calculations of a tapered log (i.e. BC log scale versus US western scribner scale, etc.).

Table 3. Canada Softwood Lumber Exports to Japan by Price Category.

Notes: "nes" is an abbreviation for "not elsewhere specified"

	Japan quantity	$ CDN	$ CDN/m3	$US/m3	CODE
Canada, 1997					
SW Lumber					
SW, treated	3,395	1,992,531	587	425	1
SPF	1,650,744	605,269,241	367	266	3
Hem-Fir	1,360,276	546,424,309	402	291	3
Sitka Spruce	204,405	124,117,304	607	440	1
Spruce, nes	58,090	34,234,893	589	427	1
Pnderosa Pine	196	86,774	442	320	2
Red Pine					
Red and White Pine	1,742	851,450	489	354	2
Lodgepole Pine	5,925	4,231,996	714	518	1
Pine, nes					
Hemlock, nes	600,275	245,512,631	409	296	3
True Fir/Balsam	7,577	2,858,933	377	273	3
Western Red Cedar	123,971	84,211,751	679	492	1
Yellow Cedar	318,721	210,843,772	662	479	1
Cedar, nes	783	520,116	664	481	1
Douglas-Fir	537,715	265,652,286	494	358	2
SW, nes	419,374	96,286,521	284	210	3
TOTAL SW	5,593,189	2,348,094,508	420	304	

SW Code	m3	$CDN	$CDN/m3	$US/m3
1	715,290	460,152,363	667	483
2	539,457	266,503,681	530	384
3	4,338,443	1,621,438,409	374	271
4	0	0		
Total	5,593,189	2,348,094,508	420	304

"SW" is an abbreviation for "softwood"

"SPF" is an abbreviation for a "Spruce-Pine-Fir" species mix

Hemlock, nes is hemlock lumber not counted in the Hem-Fir species mix

Sitka spruce, spruce, nes, the listed pines and true fir are not counted in the SPF species mix

4.2 Partial Spatial Equilibrium Trade Modelling

As discussed in some detail in *Competitor Analysis One*, a partial spatial equilibrium model was developed and employed on the four categories of softwood lumber production/trade data and the four categories of softwood logs. The model was also employed on structural and non-structural wood-based panels, but without success. The reason for this is likely two-fold. First, for North America and Western Europe, panels are traded far less than with lumber and logs (panels being produced for domestic consumption in Canada, the US and Western Europe. Second, global trade of panels is dominated by South Sea exports of hardwood plywood to Japan, making it very difficult for any trade model effort to capture the relatively small exports of softwood plywood and OSB to Japan.

The objectives of the trade modelling exercise were to:

1) offer a tool for accessing future trade flow scenarios given possible changes in production costs/technology, demands, exchange rates, and so on;
2) offer a framework for focussing industry knowledge on BC's potential competitive advantage within each of the four lumber (and log) categories given such changes.

The trade modelling process has three distinct components:

1) developing a model to predict known trade flows for the 1997 base year for each category of softwood lumber and logs (Section 4.2.1)
2) develop base line forecasts for the years 2002 and 2007 (Section 4.2.2); and
3) run "what-if" scenarios on these forecasts. Such scenarios could include a change in technology for one or more of the supplying countries, the introduction of a new supplying region, a change in relative exchange rates, or a major change in demand for a wood product category.

4.2.1 The 1997 Base Model

A partial spatial equilibrium model is essentially a linear programming exercise that attempts to maximize the economic efficiency of getting similar products (e.g. softwood lumber category #1) from the supplying regions that produce more than they consume to the demanding regions that produce less than they consume. The existence of these excess supplies and excess demands create price spreads which in turn create incentive for trade until prices equilibrate to a "world" price. (Refer to *Competitor Analysis One* for a detailed discussion on the trade modelling methodology.)

To set up the 1997 base trade model, three categories of information are needed:

1) known production and consumption volumes of each of the four categories of softwood lumber and logs, for both the supply regions (Canada, US, Scandinavia. Baltics, Russia, New Zealand, Chile, and "rest of world") and for the demand regions (US, Japan, Western Europe, and "rest of world");
2) the FOB prices per cubic metre for each of the categories of softwood lumber and logs for each of the supplying regions, and the CIF (or in the case of Japan the C&F) prices per cubic metre for each of the categories of softwood lumber and logs for each of the demand regions;
3) estimates of the supply and demand **price elasticities** for each of the supply and demand regions for each of the categories of softwood lumber and logs.

A demand (supply) price elasticity is a parameter that defines how specifiers (producers) react to changes in price. For example, a demand price elasticity for softwood lumber #1 for Canada of -0.01 says that a 10% increase in the price of this grade of lumber leads to a 1% decrease in the quantity demanded in Canada. Similarly, a supply elasticity for softwood lumber #1 In Canada of 0.9 says that a 10% increase in the domestic price of this grade of lumber leads to a 9% increase in the quantity supplied in Canada.

Another way of thinking about the demand elasticities is as an indicator of available substitutes. If there are few alternative substitutes for a product, a price rise will be met with a less than proportional decrease in the quantity demanded (the price elasticity of demand will be less than 1). Appearance grade yellow cedar would be a good example here. On the other hand, if there are a great number of substitutes (either with other products or with a similar product from another country) a price increase will be met with a greater than proportional decrease in the quantity demanded (the price elasticity of demand will be greater than 1). US construction grade SPF would be a good example here.

From the supply side, the price elasticity measures the ability/willingness to increase supply as a result of an increase in price. Supply elasticities tend to be greater than one, except for the very highest grade of lumber or logs, where supply tends to be limited regardless of price.

There are a number of existing trade models which estimate supply and demand elasticity parameters internally (for example, the Global Trade Model developed and maintained by the Centre for International Trade in Forest Products at the University of Washington). These parameters are estimated through regression analysis utilizing time-series data, often over several decades.

As discussed in *Competitor Analysis One*, this approach was not taken here for two main reasons. First, it is difficult to secure time series data on volumes and prices when moving beyond a huge aggregate such as softwood lumber in total (which is exactly why softwood lumber in aggregate has been used in other efforts). Second, it is not at all clear that such estimates are reliable given the number of structural supply and demand changes that have taken place over the 1990s. In other words, it is not believed by the authors that trends in supply and demand for wood products that were established over the past two decades are a good indicator of what is to happen in the next decade.

The approach taken in this study was to use published supply and demand parameters where possible (see Gaston, Christopher, 1997, "An Analysis of the Japanese Demand for Wood products by Type, Species and Source", Canadian Forest Service *Working Paper 97.02*), combine with best guesses where not possible, and input all as "assumptions" to the trade model. These parameters are then challenged through "what-if" scenarios as discussed above.

Table 4 lists the supply and demand elasticities used for the 1997 base model for softwood lumber. The elasticities used for softwood logs are comparable.

Table 4. Softwood Lumber Price Elasticities

Export Regions	SWL 1		SWL 2		SWL 3		SWL 4	
	Supply	Demand	Supply	Demand	Supply	Demand	Supply	Demand
Canada	0.9	-0.1	2	-0.5	3	-1	4	-5
US (exporter)	0.9	-0.1	2	-0.5	2	-1	3	-1.5
Scandinavia	0.9	-0.1	2	-0.5	2	-1	4	-5
Baltics	0.6	-0.1	1.5	-0.5	3	-1	4	-5
Russia	0.6	-0.1	1.2	-0.5	2	-1	3	-5
New Zealand	0.6	-0.1	1.5	-0.5	2.5	-1	4	-5
Chile	0.6	-0.1	1.5	-0.5	2.5	-1	4	-5
Other Exporter	0.6	-0.1	1.5	-0.5	2.5	-1	3	-5

Import Regions	SWL 1		SWL 2		SWL 3		SWL 4	
	Supply	Demand	Supply	Demand	Supply	Demand	Supply	Demand
US (importer)	0.6	-0.1	1.5	-0.5	2	-1	3	-1.5
Japan	0.9	-0.1	1.5	-0.5	2	-1	3	-5
W. Europe	0.9	-0.1	1.5	-0.5	2	-1	3	-2
Other Importer	0.6	-0.1	1.2	-0.5	2	-1	3	-5

With the production/consumption volumes inputted to the trade model for all of the defined supply and demand regions, as well as the respective FOB prices (exporter) and CIF prices (importer) and the supply and demand elasticities, it is now possible to run the model and compare the results to known trade.

The first runs for softwood lumber were very accurate as compared to a separate trial using softwood lumber in aggregate. There were a few cases, however, where either the price elasticities had to be adjusted to more closely match known trade in each of the four lumber categories, or the addition of *constraints* to the trade optimizing process was deemed appropriate.

Like the price elasticities of supply and demand, model constraints are simply assumptions which can also be challenged through "what-if" scenarios. The two main constraints that were imposed for the 1997 base model were:

- Restrict Canada/US trade of softwood lumber #4 (the US construction grade) to the existing quota allowance;
- Restrict North America/Western Europe trade of softwood lumber #3 and #4 to reflect the non-tariff, phytosanitary trade barrier.

Figures 7 to 10 in Section 5.1 compare the model projected trade flows to known trade for Canada exports, US exports, US imports and Japan imports for softwood lumber #1 through #4. When comparing projected against actual, take note of the scale of the volume. Figures 11 to 14 show the results for softwood logs.

4.2.2 The Model Forecasts for 2002 and 2007

With the 1997 base model in place, trade forecasts for the years 2002 and 2007 were developed. This was accomplished by making assumed changes in the supply and demand schedules for each of the eight defined supply regions and four defined demand regions, and for each of the 4 categories of softwood lumber and four categories of softwood logs.

Figures 2 through 4 illustrate this process. In Figure 2, Canadian exports of softwood lumber are shown when the model has been run without any changes in the any of the global supply or demand schedules. As expected, the model forecasts for 2002 and 2007 are identical to the 1997 base year.

Figure 3 illustrates a single change in the world, being that the Canadian supply of softwood lumber 1 through 4 has increased by 3% a year from 1997 to 2007 (i.e., that this is the only change in supply and or demand among the eight supplying and 4 demanding regions). The most noticeable trade flow result of the increased Canadian supply is increased trade to Japan for softwood lumber #1 through #3, and initially increased trade to the US for softwood lumber #4 (and ultimately constrained by the quota restriction placed in the model). The increased trade is due to a lower world price as a result of the higher Canadian production, reflecting the significance of Canada as a global supplier. Note that many of the non-Canadian exports dropped, due in part to increased domestic demand and in part to reduced supply, both as a result of the lower prices caused by increased Canadian supply.

Figure 4 shows the result of this increased Canadian supply from the Japan import perspective.

A note on reading the forecast figures:

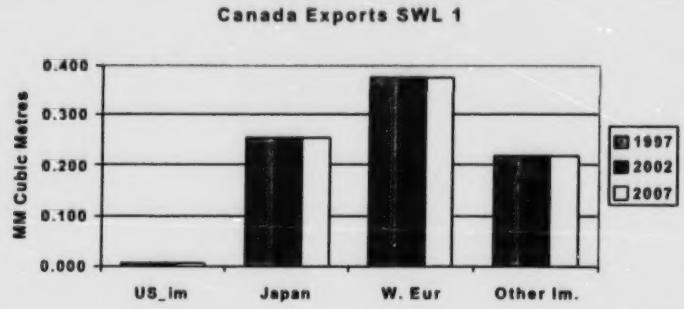
In each of the figures in Sections 4.2, 5.1 and 5.2, each page represents either one exporting country ore one importing country for softwood lumber or logs for price categories #1 though #4. For example, in Figure 3, projected trade flows are shown from Canada as a result of a 3% increase in Canadian supply of softwood lumber #1 through #4 annually. The top frame shows that by 2002, the model predicts a slight increase in Canada trade of softwood lumber #1 1, being the high end appearance grade, to Japan, a somewhat larger increase in shipments to Western Europe, and a decrease in shipments to"other importers". This is indicated withe the black bar, in comparison to the 1997 base shown with the gray bar. For the next period, being 2007, shipments to Japan increase more dramatically, while they decrease for Western Europe and increase only slightly for other importers. The next three frames show the same predicted outcome of Canada exports of softwood lumber # 2 3 and 4, respectively, as a result of the increased Canadian supply.

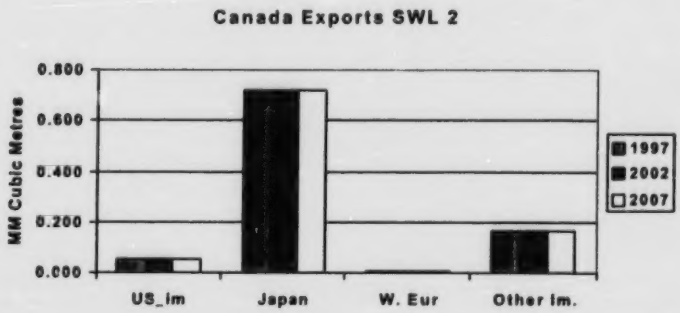
Figure 2.

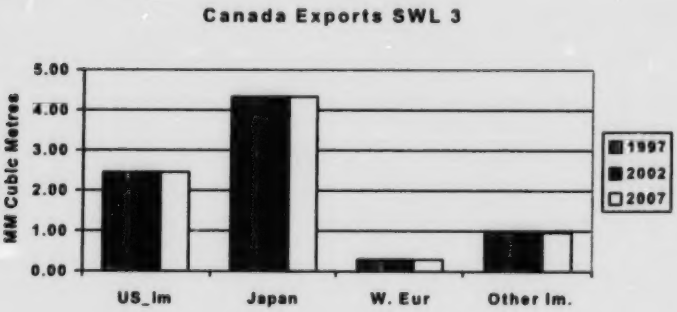
1997, 2002, 2007
Projected Trade Flows

No Assumed changes in Global Supply/Demand

Canada Exports of Softwood Lumber







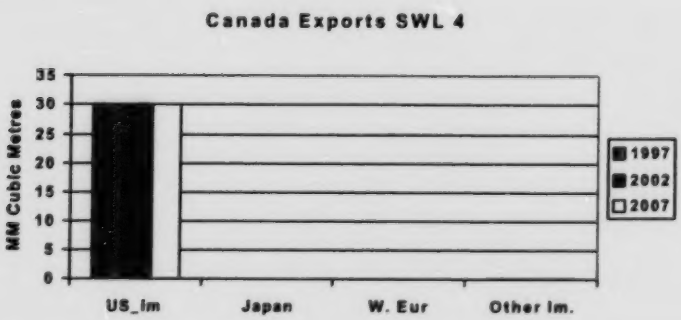
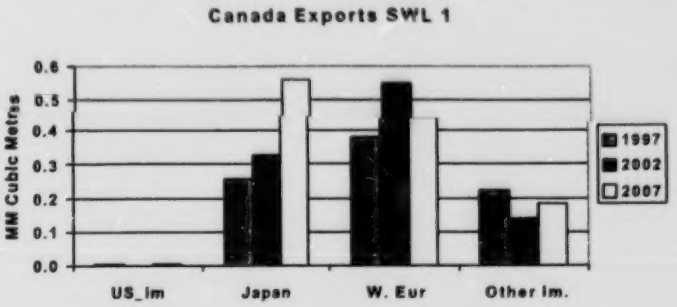


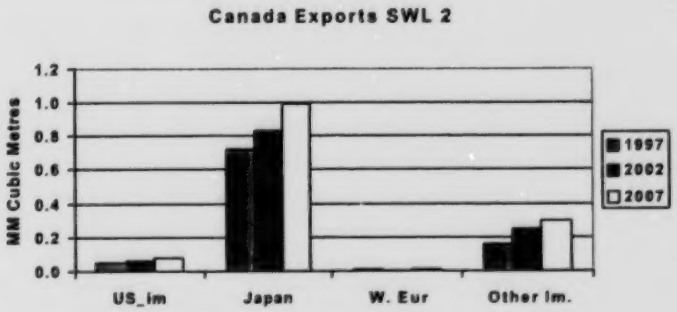
Figure 3.

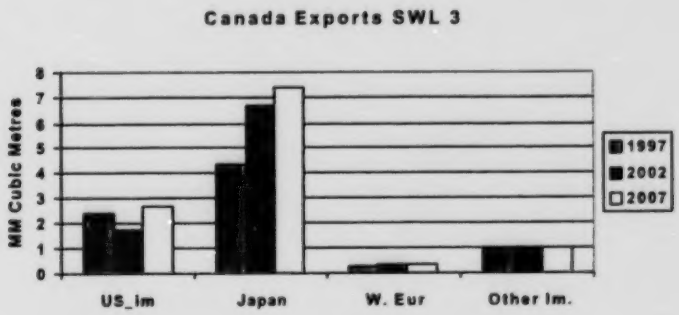
1997, 2002, 2007
Projected Trade Flows

Assumed 3% Annual Increase in Canadian Supply of Softwood Lumber 1-4

Canada Exports of Softwood Lumber







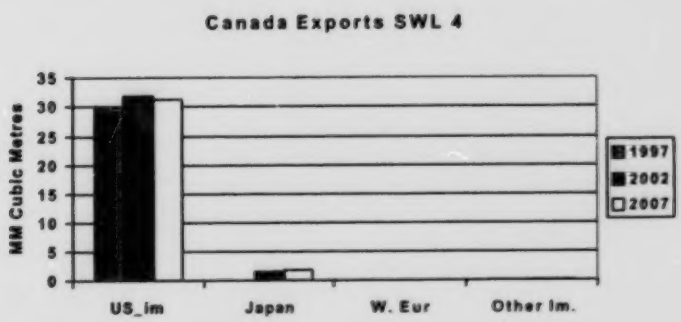
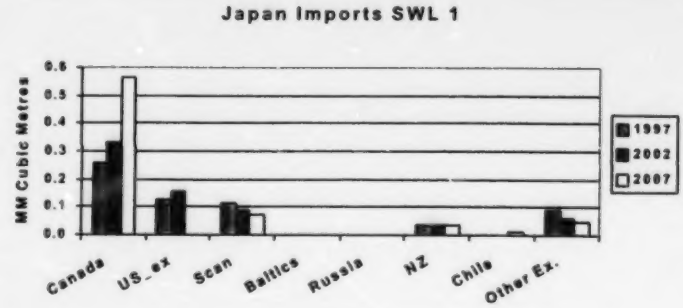


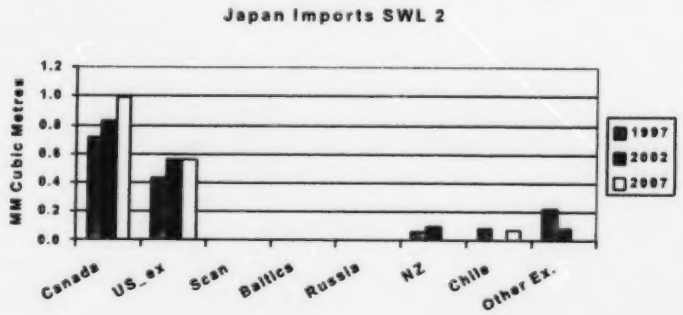
Figure 4.

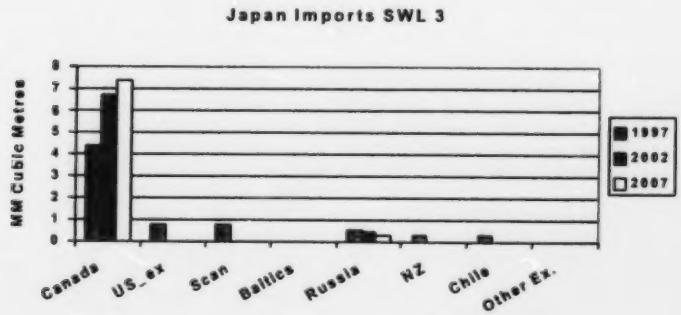
1997, 2002, 2007
Projected Trade Flows

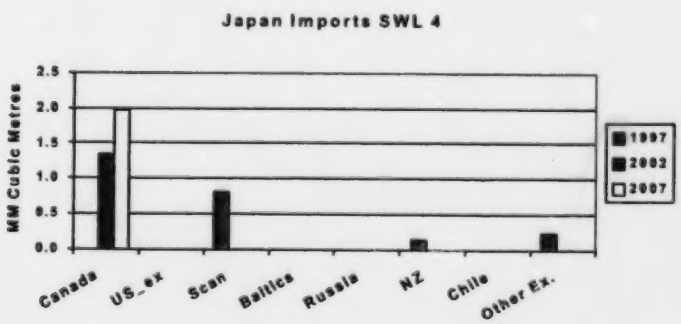
Assumed 3% Annual Increase in Canadian Supply of Softwood Lumber 1-4

Japan Imports of Softwood Lumber









Figures 5 and 6 illustrate a further change, being a 2% annual decrease in the demand for softwood lumber 1 through 4 by the US on top of the Canadian increase. The most noteworthy effect here is the change in Canada/US trade of softwood lumber #3 and #4, with a tradeoff of US imports of #3 for the lower grade #4, and in the case of the latter, substitution of domestic production for Canadian product.

This process of inputting assumed changes in the supply and demand schedules is repeated for all exporting and importing regions, treating the four categories of lumber and logs individually (unlike the examples just illustrated, which kept changes constant through all categories of softwood lumber. Tables 5 and 6 record the annual changes in supply and demand employed in the forecasts for lumber, and Tables 7 and 8 for logs.

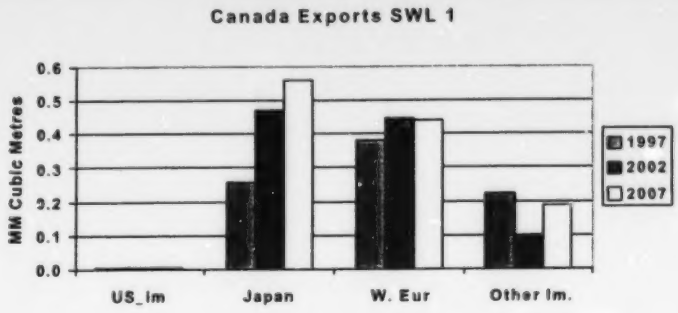
It is important to note that these "expected" changes in supply and demand are only assumptions to create a base-line forecast against which scenarios can be compared (Section 4.2.3). **As was the case with the price elasticities in the previous section, these changes can be challenged through such "what-if" scenarios.** The source of value adjusters for supply and demand reported in Tables 5 through 8 include published forecasts from such organizations as Resource Information Systems, Inc. and The Food and Agriculture Organization of the United Nations, from industry input from the project liaisons, and the best judgement of the authors.

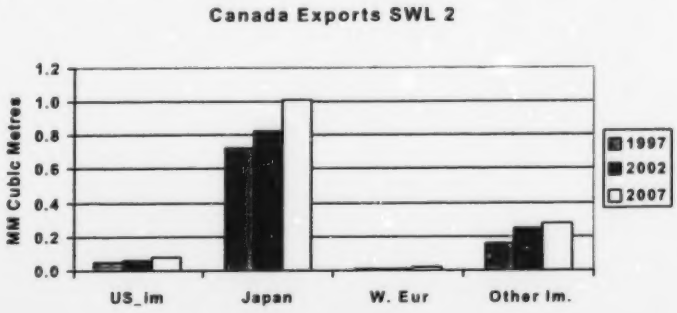
Figure 5.

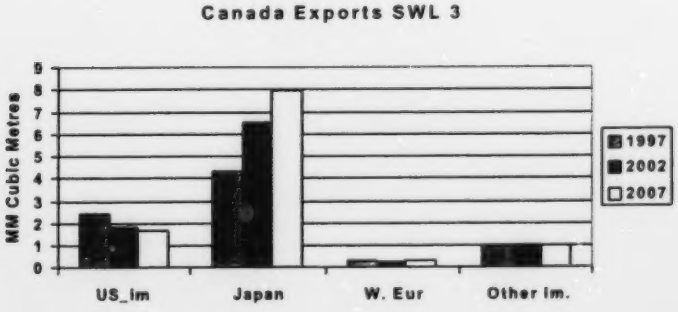
1997, 2002, 2007
Projected Trade Flows

Assumed 3% Annual Increase
in Canadian Supply AND
2% Annual Decrease
in US Demand
of Softwood Lumber 1-4

Canada Exports of
Softwood Lumber







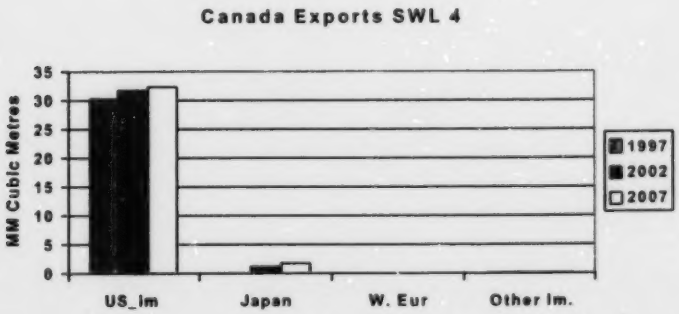


Figure 6.

1997, 2002, 2007
Projected Trade Flows

Assumed 3% Annual Increase
in Canadian Supply AND
2% Annual Decrease
in US Demand
of Softwood Lumber 1-4

US Imports of
Softwood Lumber

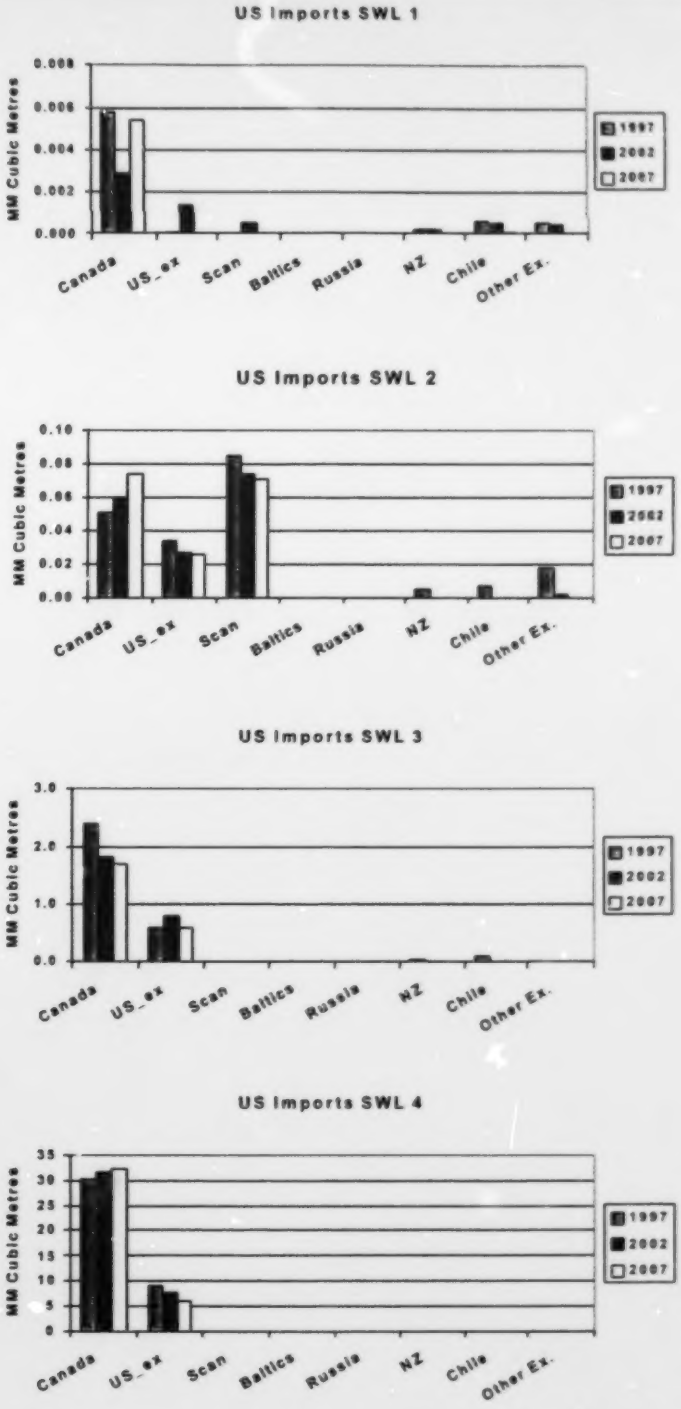


Table 5. Softwood Lumber Supply/Demand Shift Assumptions, 1997 - 2002

	SWL 1		SWL 2		SWL 3		SWL 4	
Export Regions	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**
Canada	-1.5	1.5	-1	1	0	1	0	1
US (exporter)	0	0	0	-1	0	1	0	-1.5
Scandinavia	0	0	0	0	0.5	0	0.5	0
Baltics	0	0	0	0	0	0	0	0
Russia	0	0	0	0	0	0	0	0
New Zealand	10	0	10	0	10	0	10	0
Chile	10	0	10	0	10	5	10	5
Other Exporter	2	1	2	1	2	3	2	3

	SWL 1		SWL 2		SWL 3		SWL 4	
Import Regions	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**
US (importer)	-0.5	0	-0.5	-1	-1.5	1	-1.5	-1
Japan	0	-2	0	-2	0	-2	0	0
W. Europe	0	0	1	0	1	-1	1	-1
Other Importer	0	1	0	1	0	1	0	1

Table 6. Softwood Lumber Supply/Demand Shift Assumptions, 2002 - 2007

	SWL 1		SWL 2		SWL 3		SWL 4	
Export Regions	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**
Canada	-1.5	1.5	-1	1	0	1	0	1
US (exporter)	0	0	0	-1	0	1	0	-1.5
Scandinavia	0	0	0	0	0.5	0	0.5	0
Baltics	0	0	0	0	0	0	0	0
Russia	0	0	0	0	5	5	5	5
New Zealand	20	0	20	0	20	0	20	0
Chile	10	0	10	0	10	5	10	5
Other Exporter	2	2	2	2	2	6	2	6

	SWL 1		SWL 2		SWL 3		SWL 4	
Import Regions	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**
US (importer)	-0.5	0	-0.5	-1	-1.5	1	-1.5	-1
Japan	-1	-2	-1	-2	-2	-2	0	0
W. Europe	0	0	0	0	0	0	0	0
Other Importer	0	2	0	2	0	4	0	4

Table 7. Softwood Log Supply/Demand Shift Assumptions, 1997 - 2002

	SWLog 1		SWLog 2		SWLog 3		SWLog 4	
Export Regions	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**
Canada	-1.5	1.5	-1	1	0	1	0	1
US (exporter)	0	0	0	-1	0	1	0	-1.5
Scandinavia	0	0	0	0	0.5	0	0.5	0
Baltics	0	0	0	0	0	0	0	0
Russia	0	0	0	0	0	0	0	0
New Zealand	0	10	0	10	0	10	0	10
Chile	0	10	0	10	0	15	0	15
Other Exporter	2	1	2	1	2	3	2	3
	SWLog1		SWLog2		SWLog3		SWLog4	
Import Regions	Supply	Demand	Supply	Demand	Supply	Demand	Supply	Demand
US (importer)	-0.5	0	-0.5	-1	-1.5	1	-1.5	-1
Japan	0	-2	0	-2	0	-2	0	0
W. Europe	0	0	1	0	1	-1	1	-1
Other Importer	0	1	0	1	0	1	0	1

Table 8. Softwood Log Supply/Demand Shift Assumptions, 1997 - 2002

	SWLog 1		SWLog 2		SWLog 3		SWLog 4	
Export Regions	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**	**Supply**	**Demand**
Canada	-1.5	1.5	-1	1	0	1	0	1
US (exporter)	0	0	0	-1	0	1	0	-1.5
Scandinavia	0	0	0	0	0.5	0	0.5	0
Baltics	0	0	0	0	0	0	0	0
Russia	0	0	0	0	5	5	5	5
New Zealand	0	20	0	20	0	20	0	20
Chile	0	10	0	10	0	15	0	15
Other Exporter	2	2	2	2	2	6	2	6
	SWLog1		SWLog2		SWLog3		SWLog4	
Import Regions	Supply	Demand	Supply	Demand	Supply	Demand	Supply	Demand
US (importer)	-0.5	0	-0.5	-1	-1.5	1	-1.5	-1
Japan	-1	-2	-1	-2	-2	-2	0	0
W. Europe	0	0	0	0	0	0	0	0
Other Importer	0	2	0	2	0	4	0	4

4.2.3 The Model Scenarios

A few model scenarios were run on softwood lumber to demonstrate the numerous ways in which any of the stated assumptions for the forecasts can be challenged, and how "what if" questions can be addressed. These were:

1) Challenge the assumed price elasticity of demand for Japan for softwood lumber #3 (the defined responsiveness of Japanese demand to price changes). In addition to illustrating how these parameters can be adjusted if desired, this model scenario illustrates the sensitivity of results to assumed price elasticities.

2) Challenge the assumption of zero supply growth of US "exporter" each of the categories of softwood lumber; rather increase supply in all categories of softwood lumber 2% annually through 2007.

3) "Shock" the model by increasing Russian supply of softwood lumber #3 and #4 dramatically.

4) "Shock" the model by decreasing the Canada/US quota allocation dramatically.

5) "Shock" the model by decreasing Scandinavian currencies dramatically relative to other exporting regions relative to the US dollar.

6) "Shock" the model by increasing "Other" demand for softwood lumber #3 and #4.

The results of all of these scenarios are presented and discussed in Section 5.

5 Results and Discussions

5.1 The 1997 Base Model Results

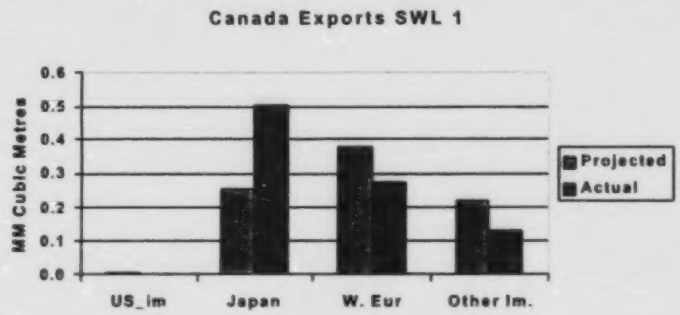
Figures 7 through 10 illustrate the model projected trade flows as compared to known trade for 1997. When one notes the small scale of softwood lumber #1 and #2, one can see that the model projections are very close to known trade.

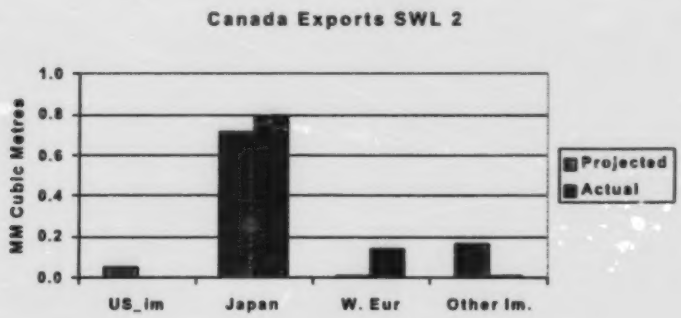
Softwood logs did not fare quite as well, but still showed acceptable results. The main reason for the comparatively lower ability for the model to predict known trade in the case of logs is undoubtably the higher degree of imposed trade restrains by most of the eight supplying regions. The results are illustrated in Figures 11 through 14.

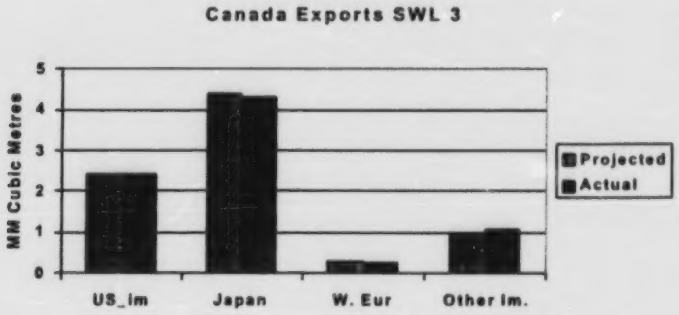
Figure 7.

Projected -vs- Actual Trade Flows, 1997

Canada Exports of Softwood Lumber







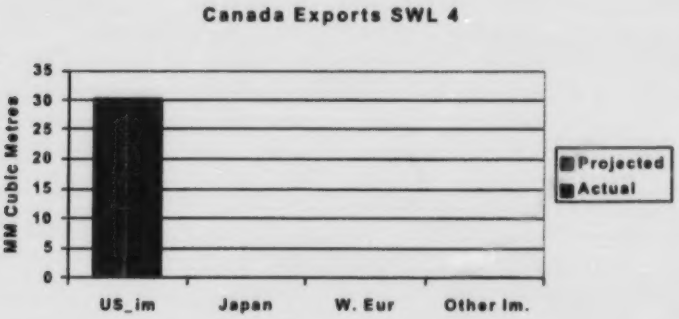


Figure 8.

Projected -vs- Actual Trade Flows, 1997

US Exports of Softwood Lumber

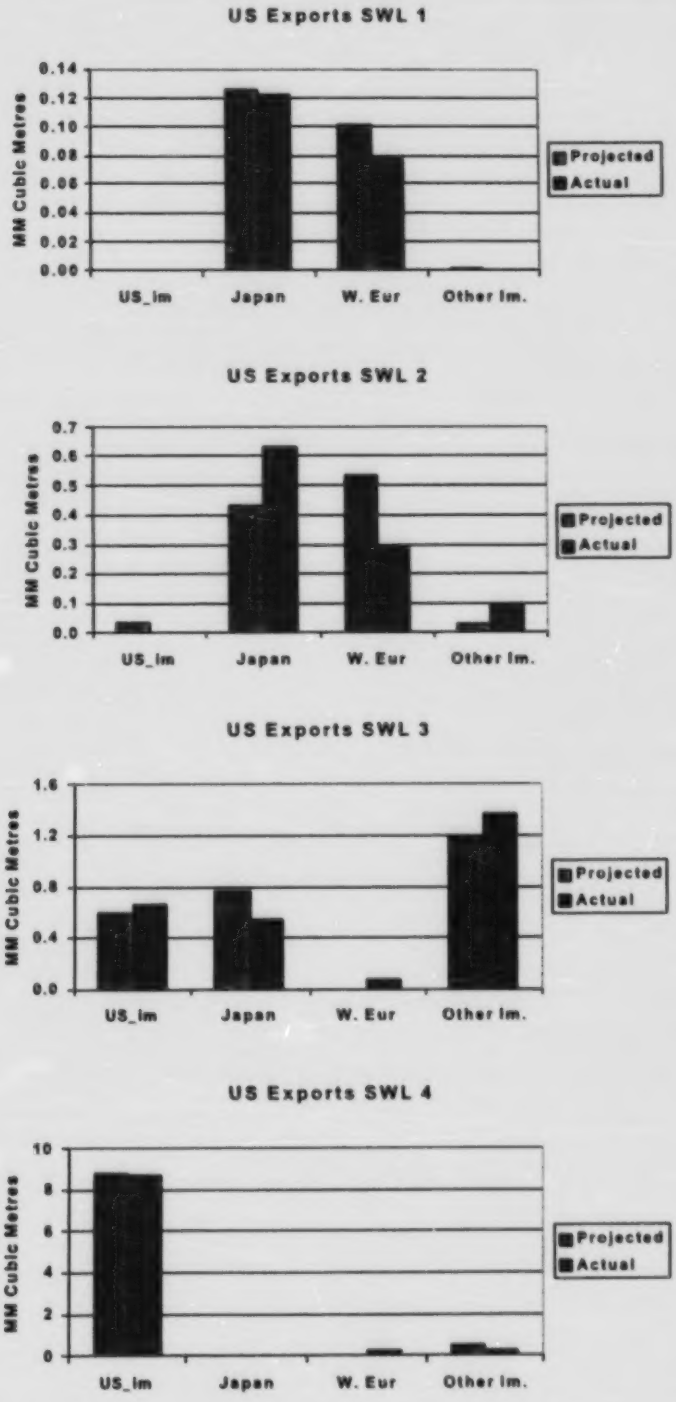


Figure 9.

Projected -vs- Actual Trade Flows, 1997

US Imports of Softwood Lumber

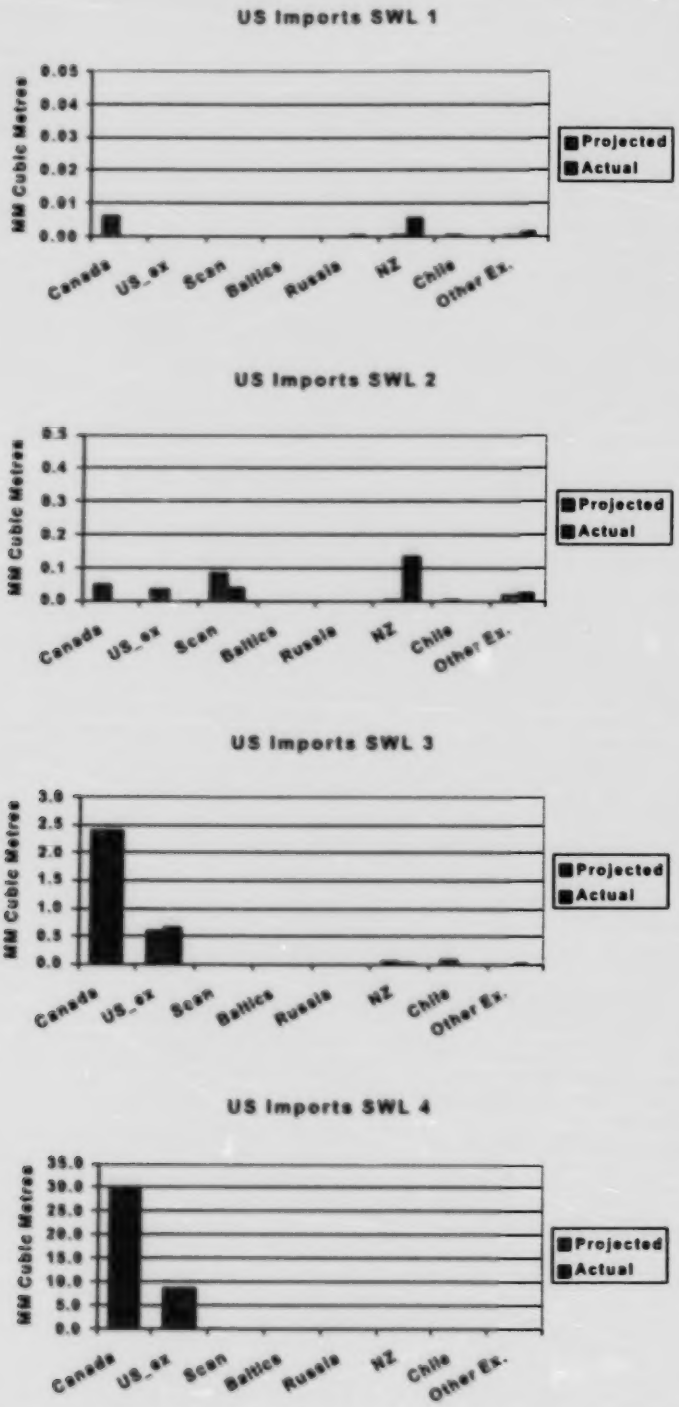


Figure 10.

Projected -vs- Actual Trade Flows, 1997

Japan Imports of Softwood Lumber

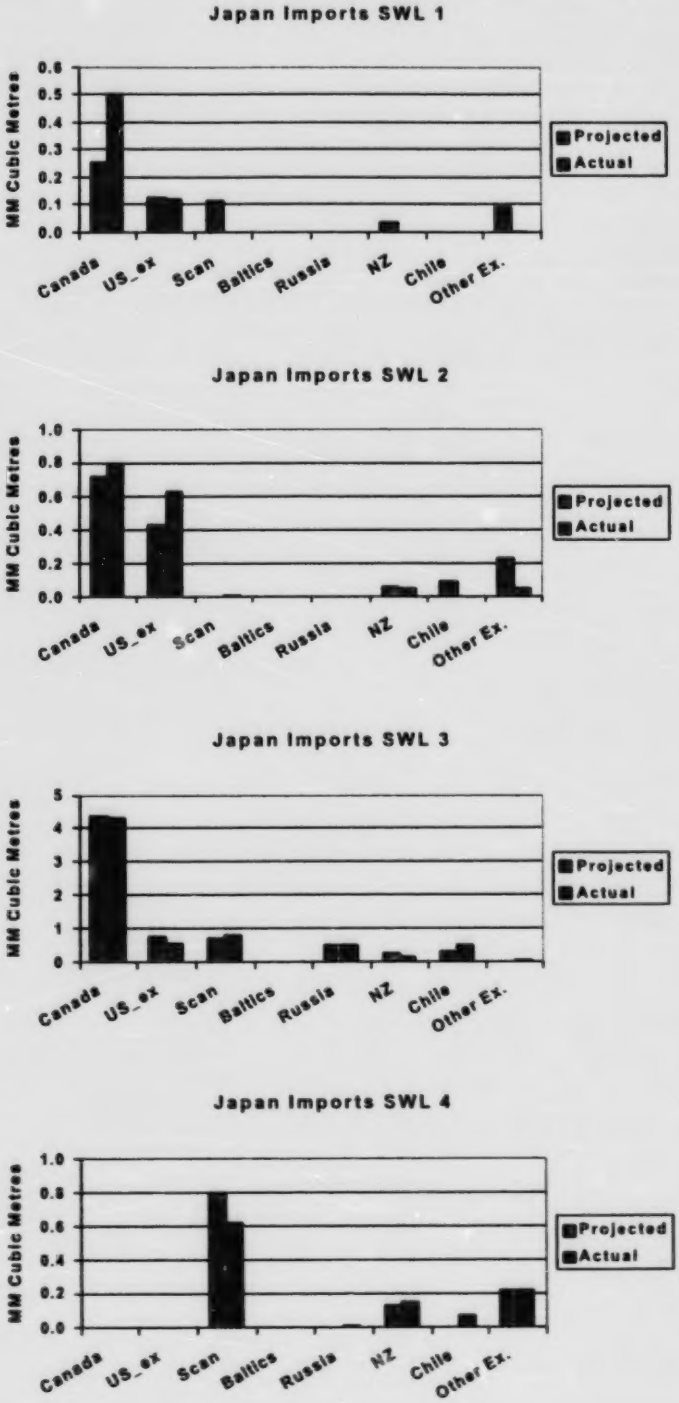


Figure 11.

Projected -vs- Actual Trade Flows, 1997

Canada Exports of Softwood Logs

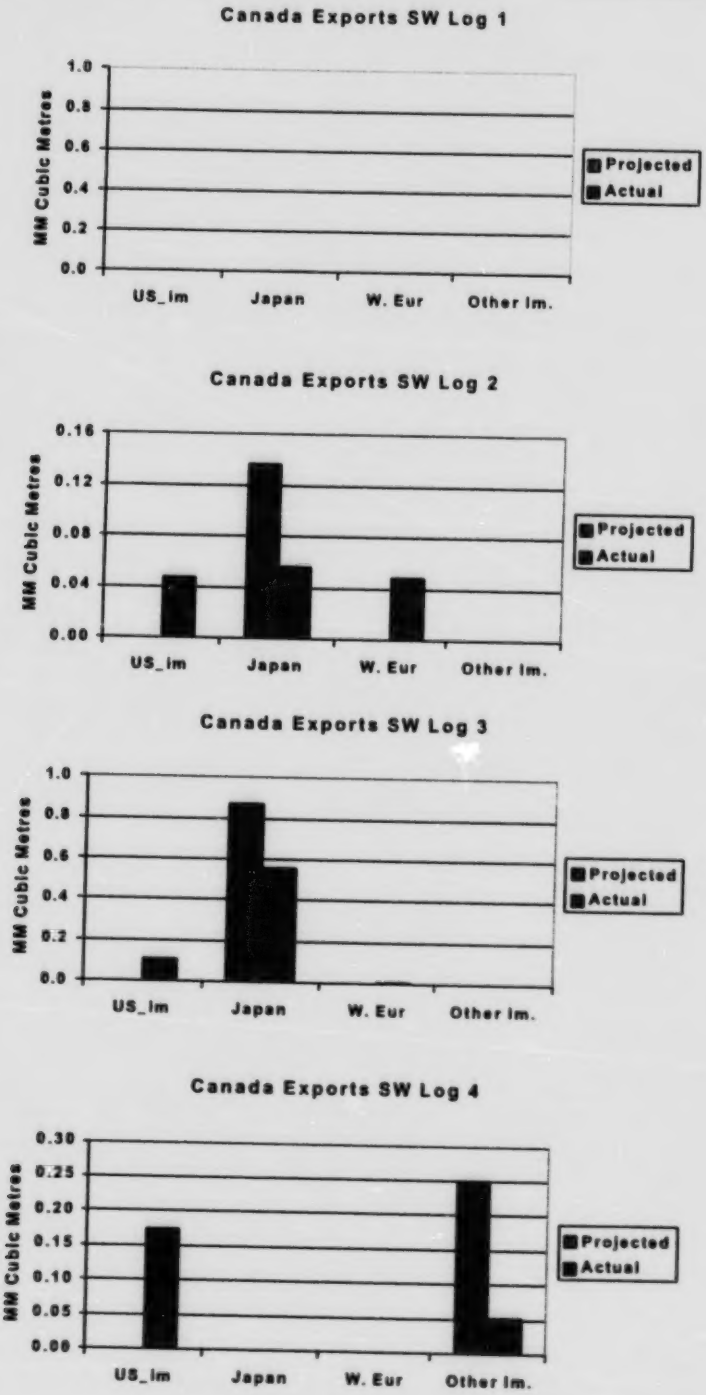


Figure 12.

Projected -vs- Actual Trade Flows, 1997

US Exports of Softwood Logs

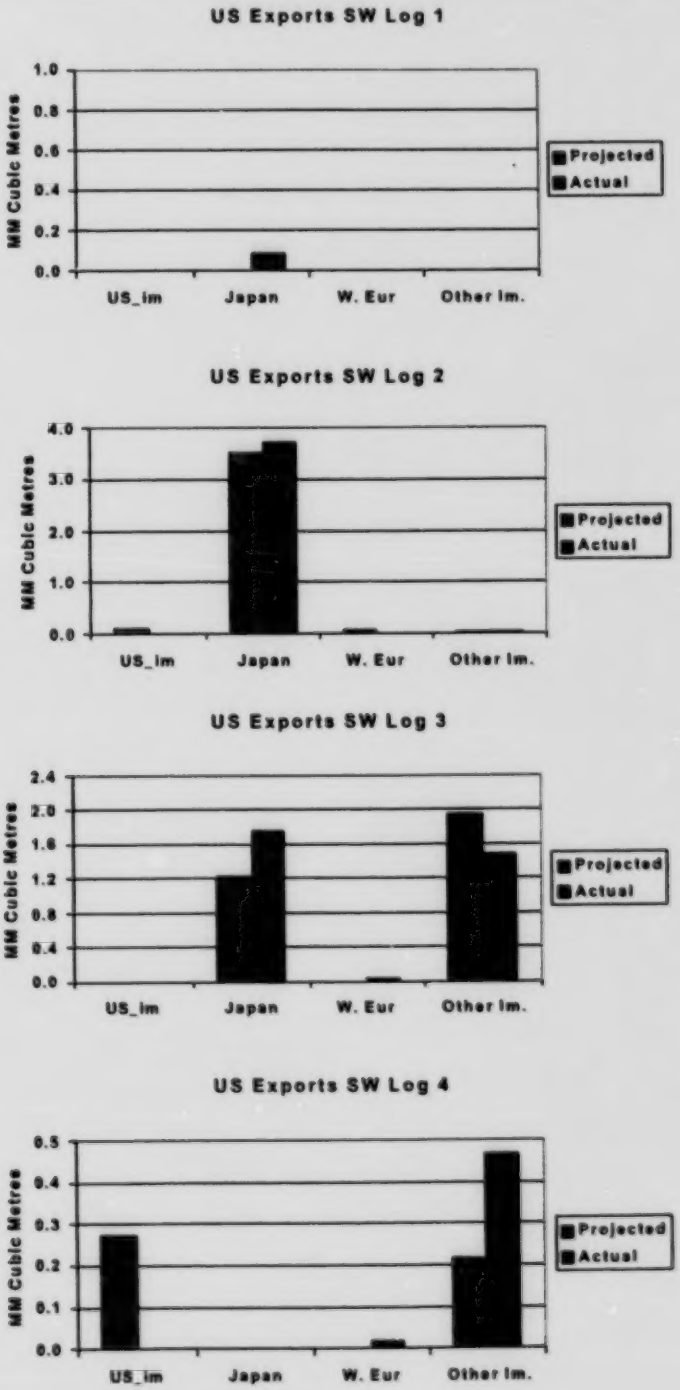
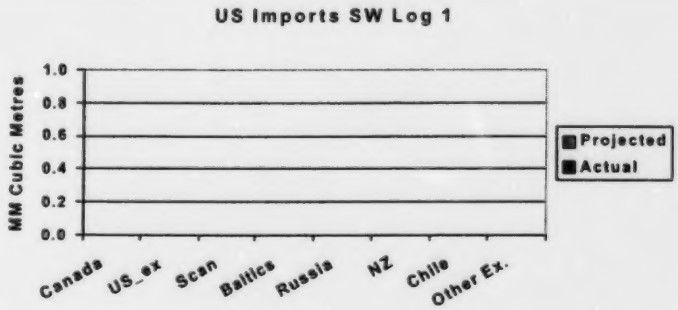
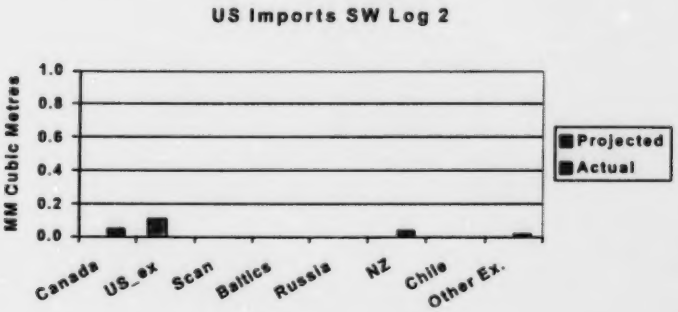


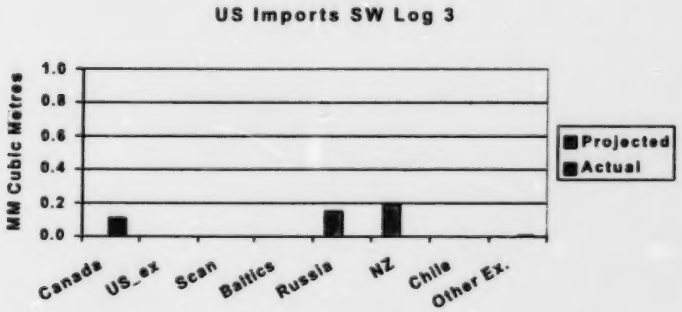
Figure 13.

Projected -vs- Actual Trade Flows, 1997

US Imports of Softwood Logs







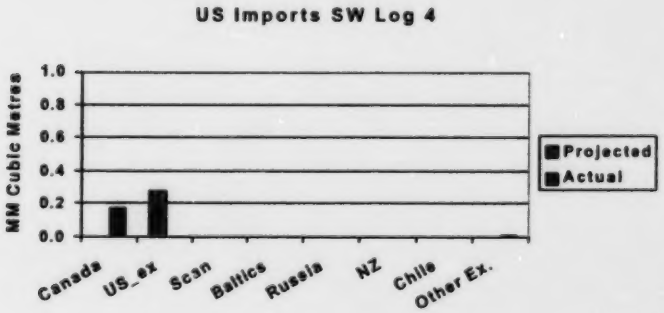
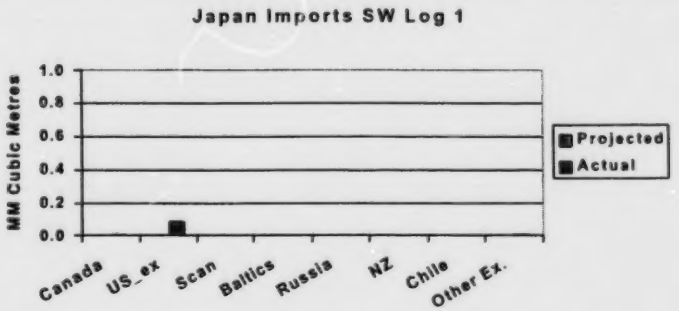
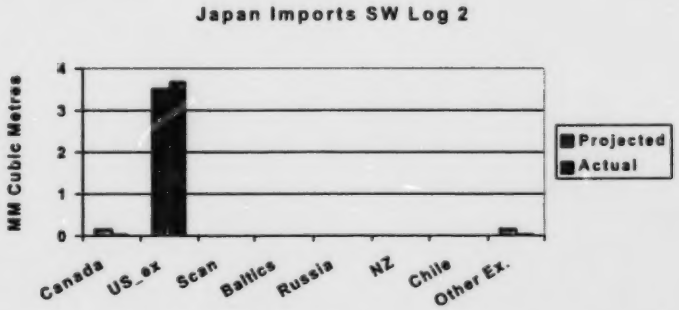


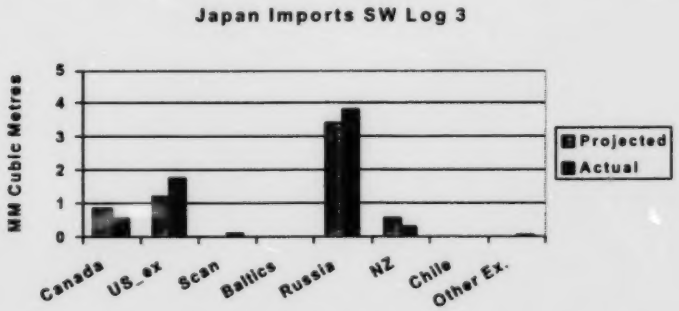
Figure 14.

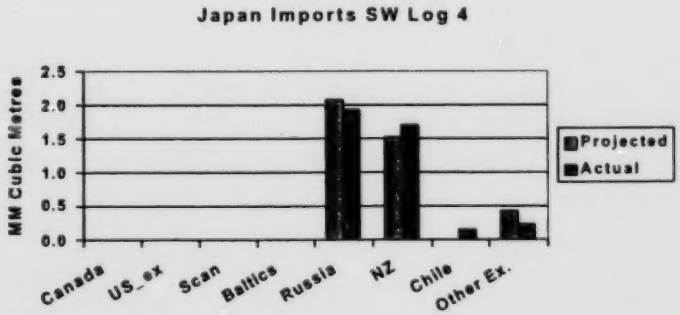
Projected -vs- Actual Trade Flows, 1997

Japan Imports of Softwood Logs









5.2 The 2002 and 2007 Forecast Results

This section offers the trade forecast results, based on the assumed changes in supply and demand for the eight supply regions and the four demand regions. These changes were itemized in Tables 5/6 and 7/8 for softwood lumber and softwood logs, respectively.

Figures 15 through 26 illustrate the forecasts for softwood lumber. Of particular interest from the Canada perspective is:

- Canada exports of softwood lumber #3 to the US goes up over time (representing "select structural" and MSR grades), driven by the assumption of increased US demand and lower prices due to decreased Japanese demand;
- Canada exports of softwood lumber #3 to Japan declines over time (representing the Japan construction or "J" grade), driven by the assumption of lower demand in Japan due to decreased annual housing starts;
- Canada exports of softwood lumber #4 to the US declines over time (representing US construction or #2 and better grade), driven by the assumption of reduced demand by both US importer and US exporter;
- Canada exports of softwood lumber #1 and #2 to Japan remains relatively stable when combined (representing appearance grades);
- US exports of softwood lumber #1 and #2 to Japan declines;
- US exports of softwood lumber 4 to US importer increases (to partially offset reduced imports from Canada);
- Scandinavian exports of softwood lumber #3 (which represents most of Scandinavia's production) declines to Western Europe and increases to "other" importers, driven by the assumption of reduced demand in Western Europe and simultaneous increased supply in Western Europe; while at smaller volumes, this is also true of softwood lumber #4; Scandinavian exports of softwood lumber #3 to Japan declines;
- Russian exports of softwood lumber #3 to Japan remains stable; exports of softwood lumber #4 increases to "other" importer;
- New Zealand and Chile exports of all categories of softwood lumber increase significantly, to all import regions except the US, driven by the assumption of significant increase in supply by these two supply regions;
- "Other" exporter sees a significant drop in the export of softwood lumber #3 to Western Europe, declining to zero by 2007, driven by the assumption of large increases in domestic demand by "other exporter".

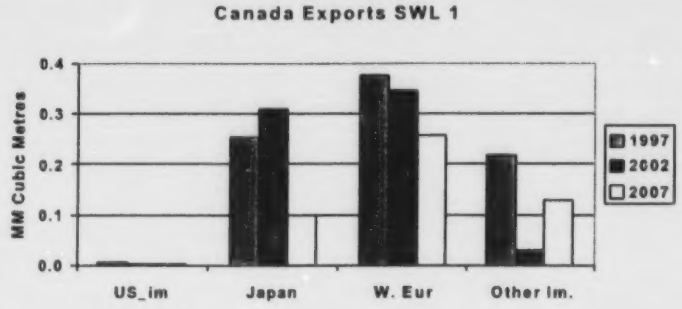
Figures 27 through 30 illustrate example forecasts for softwood logs. Items of note:

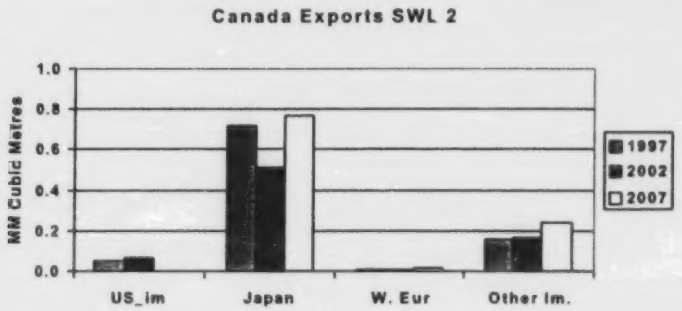
- US exports of softwood log #3 to "other" importers shifts to softwood log #4
- New Zealand log exports to all importers disappear except for #4 to Japan
- Russian softwood log #3 exports increase to the US, and #4 to "other" importer
- Japan log imports remain unchanged except for softwood logs #3, with only Russia remaining as a supplier.

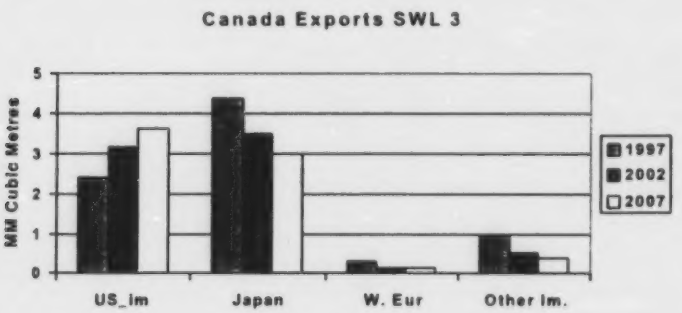
Figure 15.

1997, 2002, 2007
Projected Trade Flows

Canada Exports of Softwood Lumber







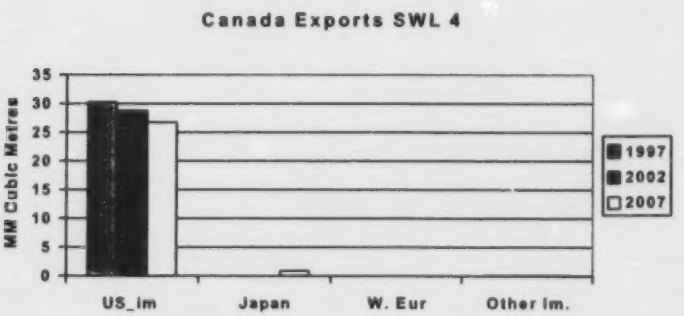
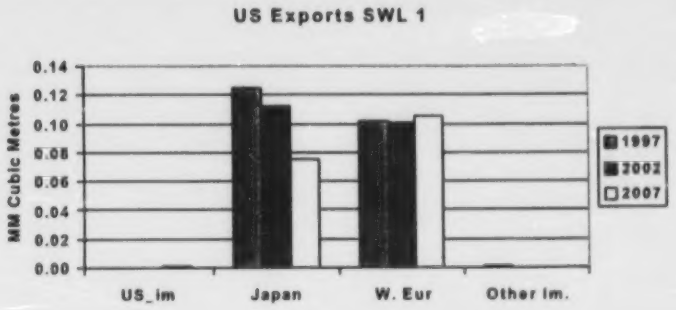
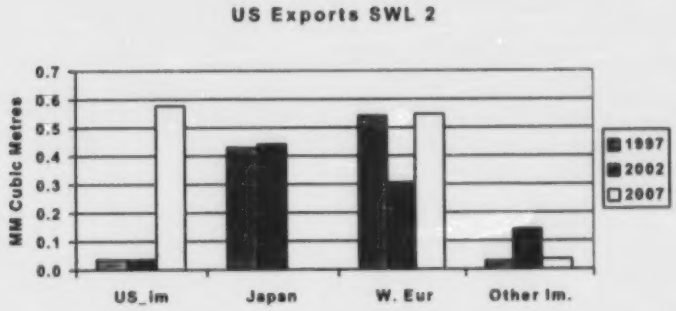


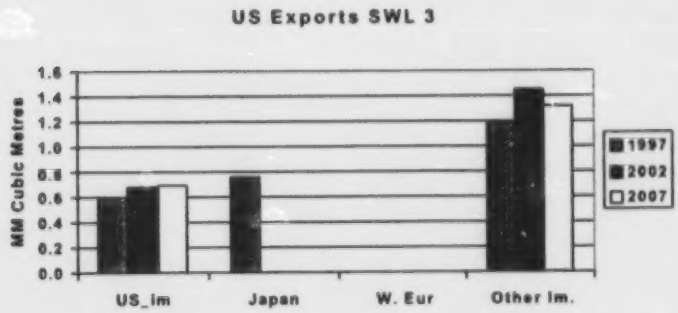
Figure 16.

1997, 2002, 2007
Projected Trade Flows

US Exports of
Softwood Lumber







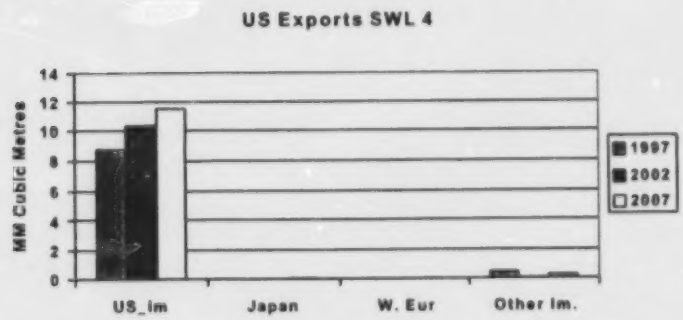
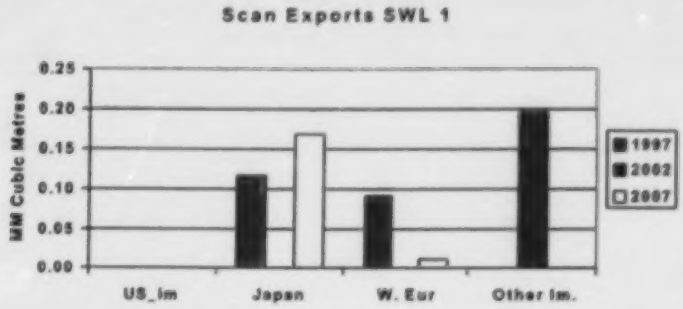
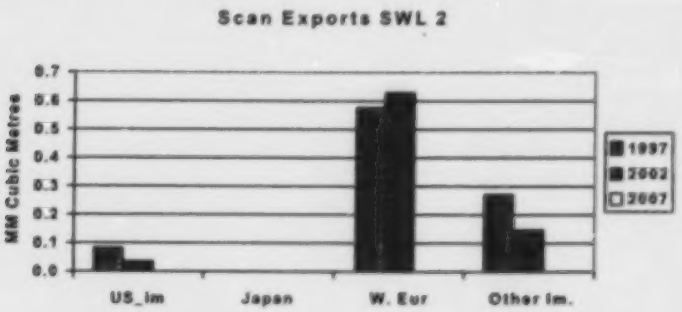


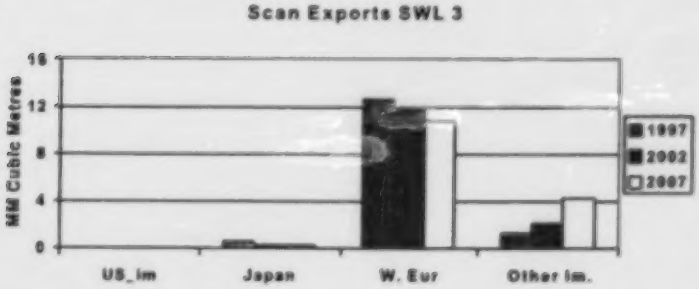
Figure 17.

1997, 2002, 2007
Projected Trade Flows

Scandinavian Exports of Softwood Lumber







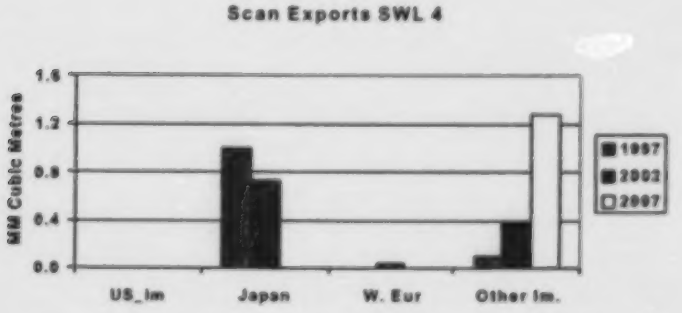
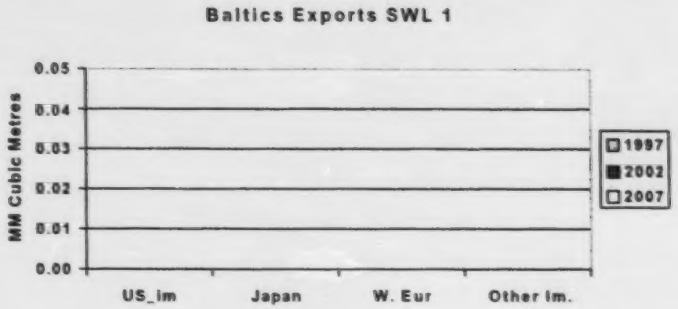
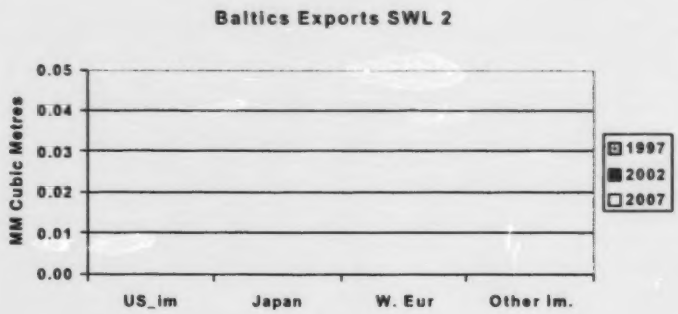


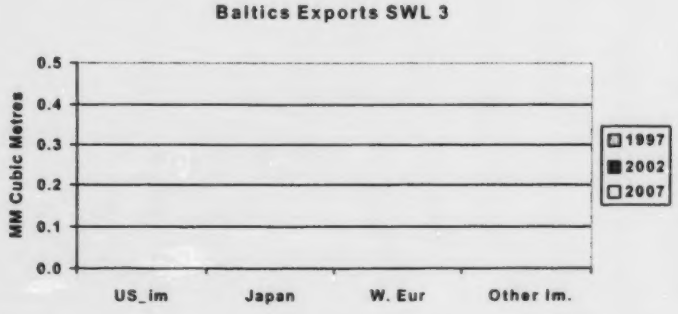
Figure 18.

1997, 2002, 2007
Projected Trade Flows

Baltics Exports of Softwood Lumber







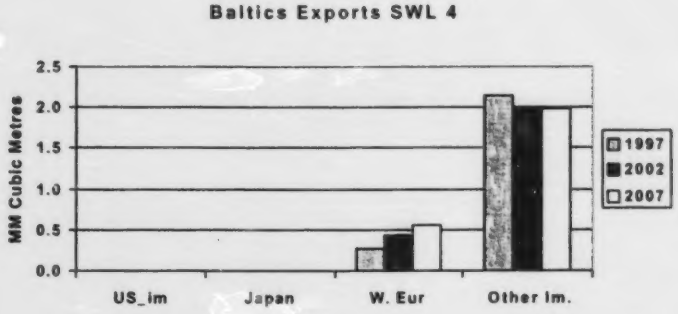
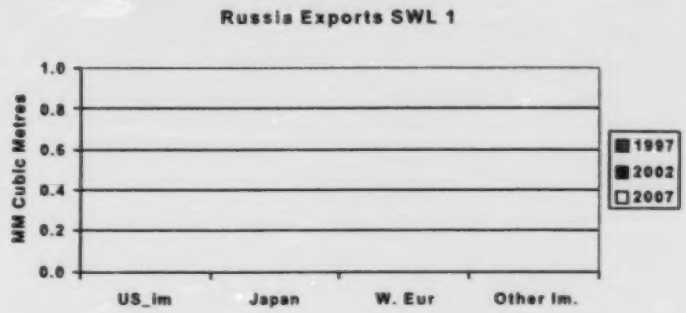
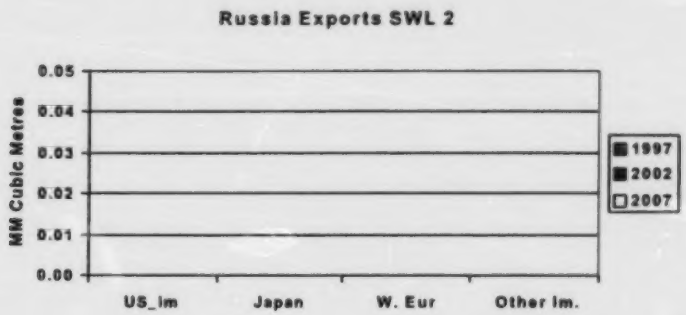


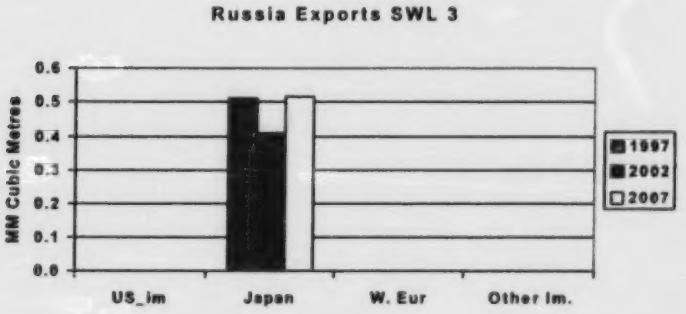
Figure 19.

1997, 2002, 2007
Projected Trade Flows

Russia Exports of Softwood Lumber







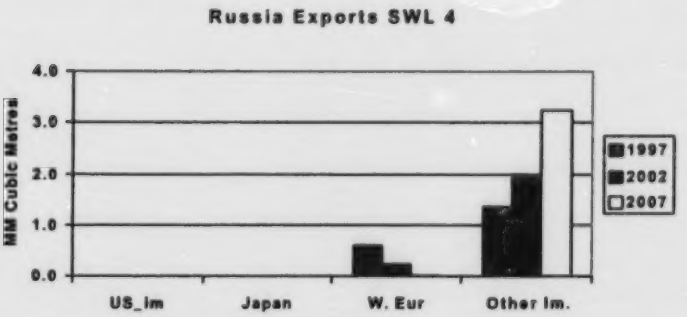
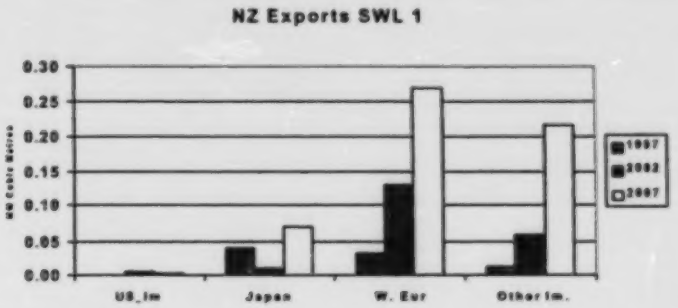
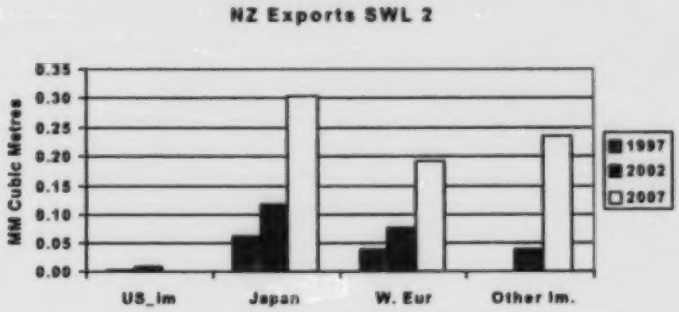


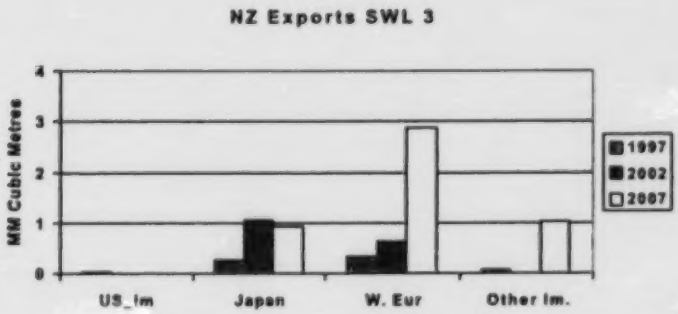
Figure 20.

1997, 2002, 2007
Projected Trade Flows

New Zealand Exports of Softwood Lumber







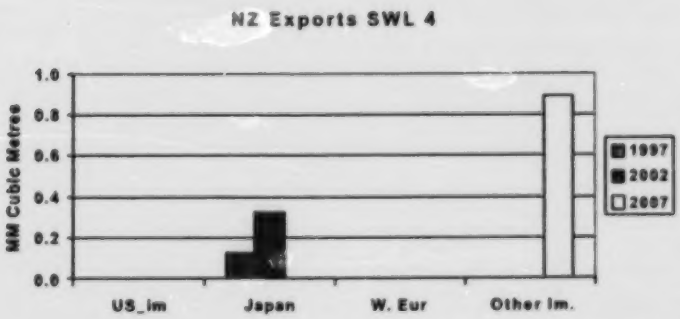
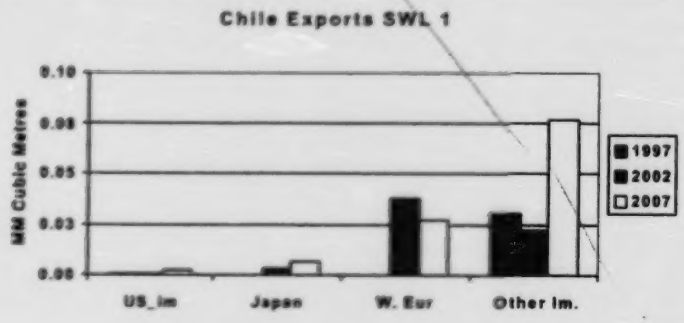
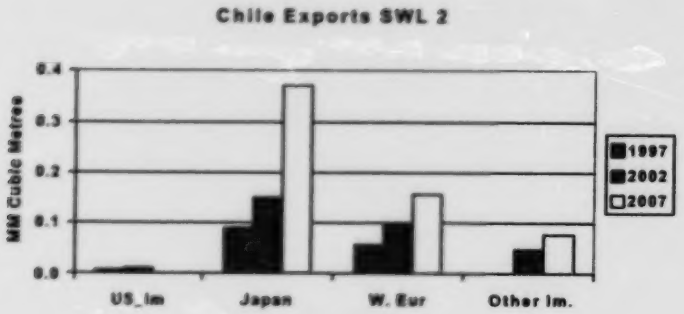


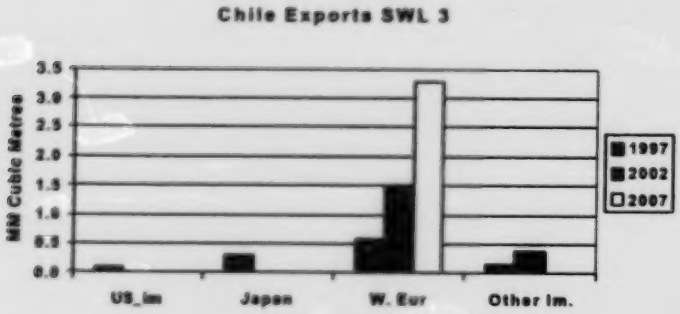
Figure 21.

1997, 2002, 2007
Projected Trade Flows

Chile Exports of
Softwood Lumber







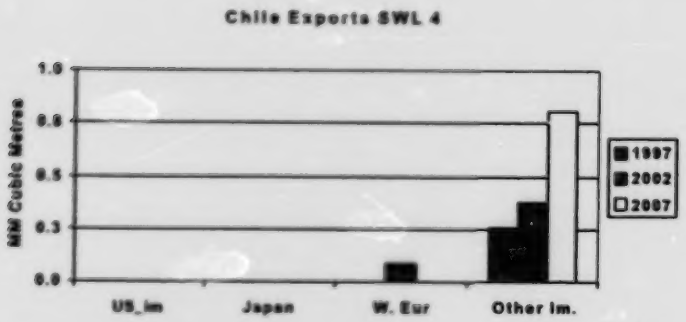


Figure 22.

1997, 2002, 2007
Projected Trade Flows

"Other" Exports of Softwood Lumber

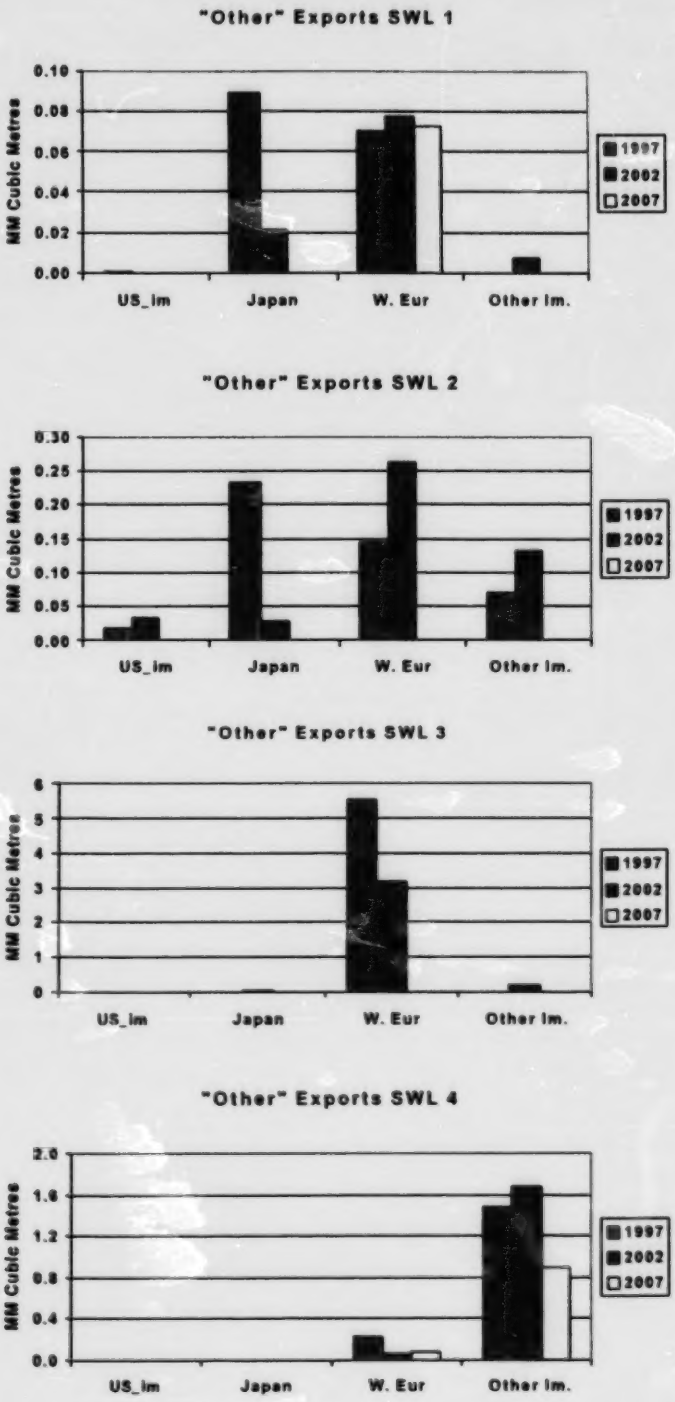


Figure 23.

1997, 2002, 2007
Projected Trade Flows

US Imports of
Softwood Lumber

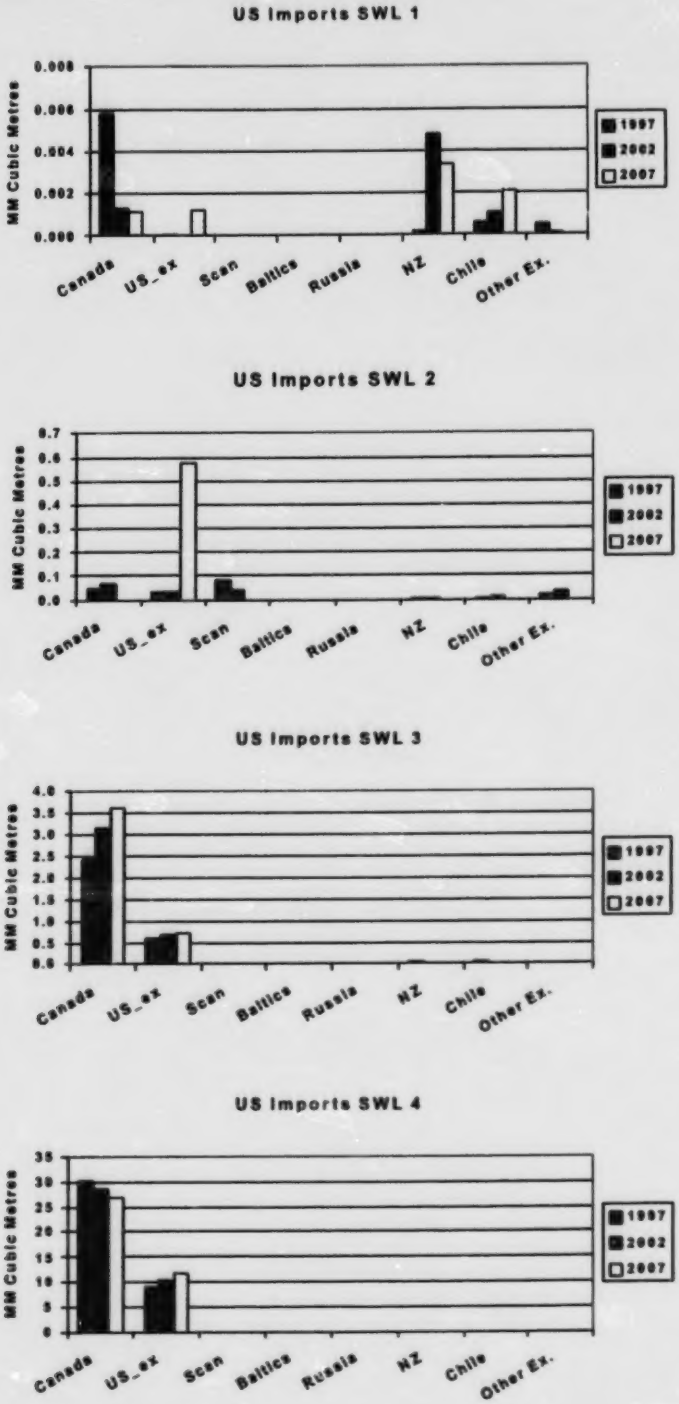
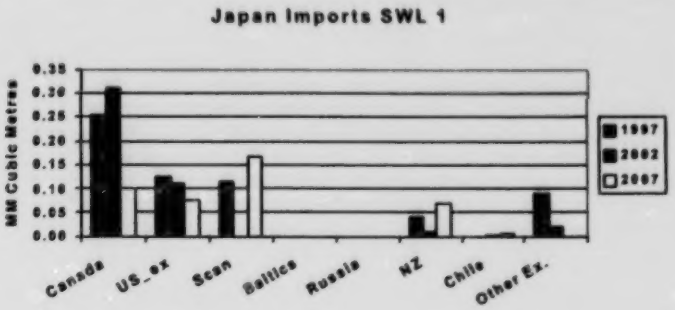
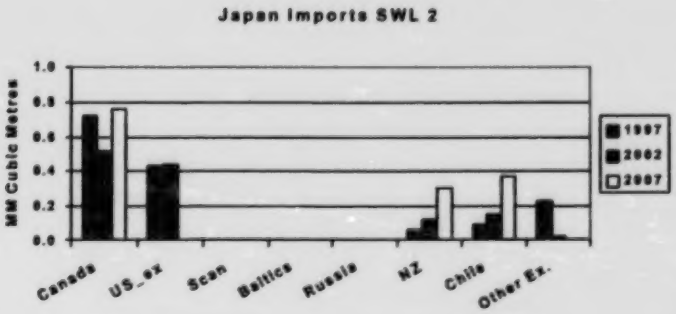


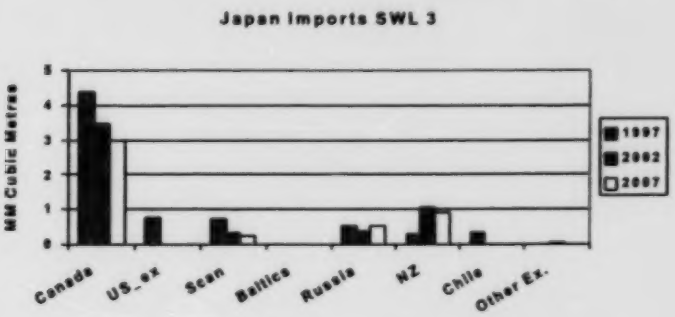
Figure 24.

1997, 2002, 2007
Projected Trade Flows

Japan Imports of
Softwood Lumber







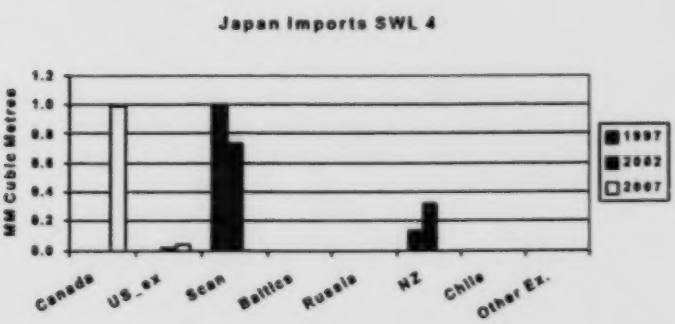
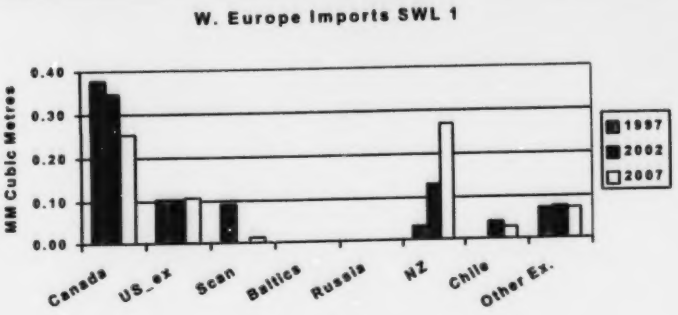
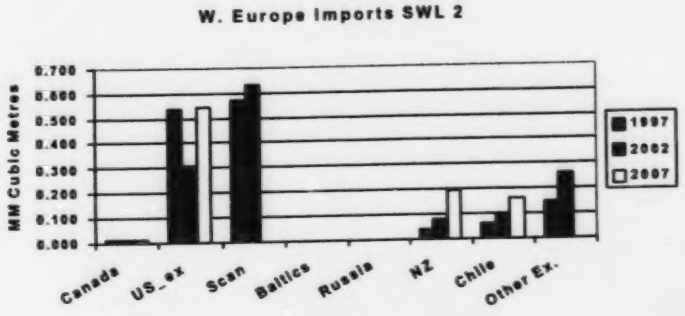


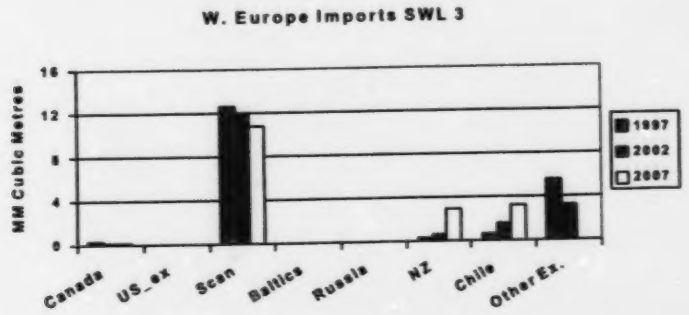
Figure 25.

1997, 2002, 2007
Projected Trade Flows

Western Europe Imports of Softwood Lumber







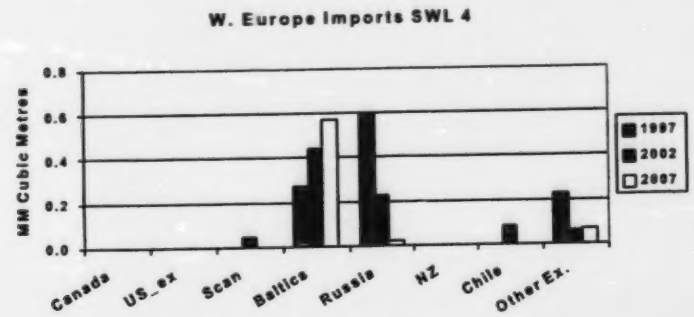


Figure 26.

1997, 2002, 2007
Projected Trade Flows

"Other" Imports of
Softwood Lumber

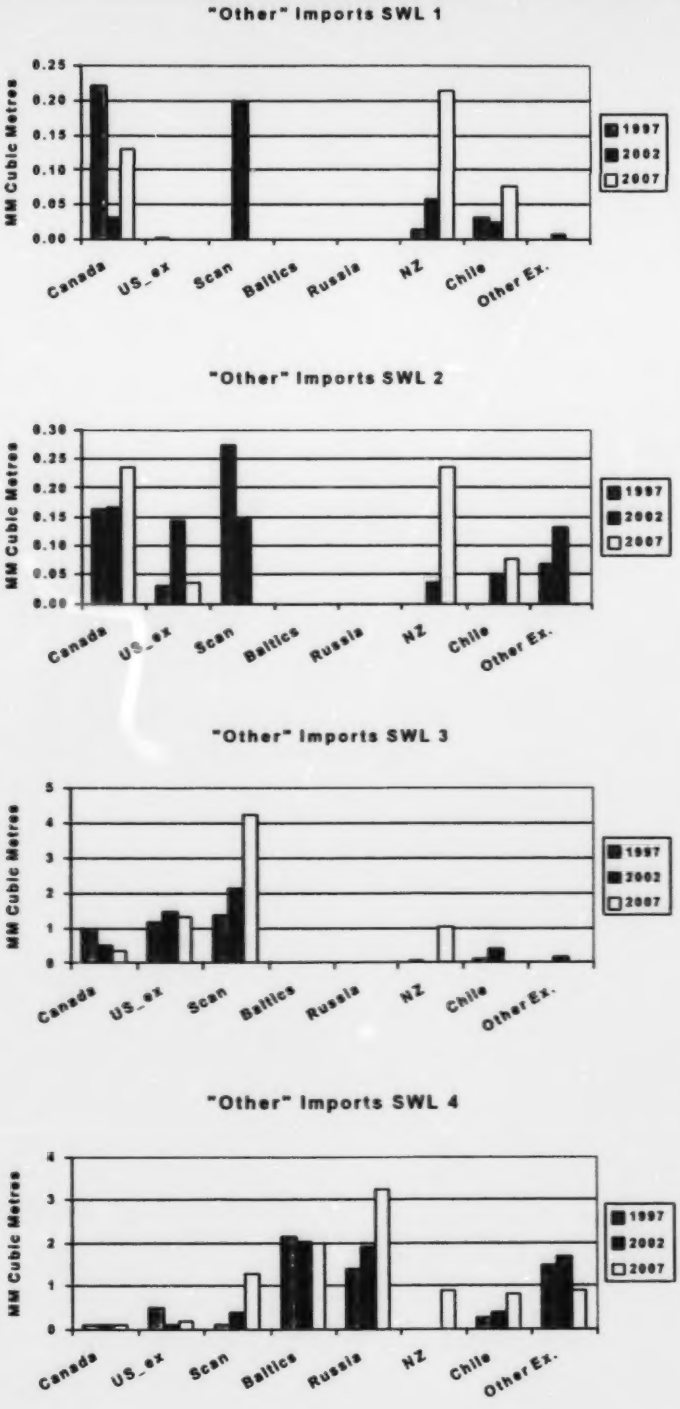


Figure 27.

1997, 2002, 2007
Projected Trade Flows

US Exports of
Softwood Logs

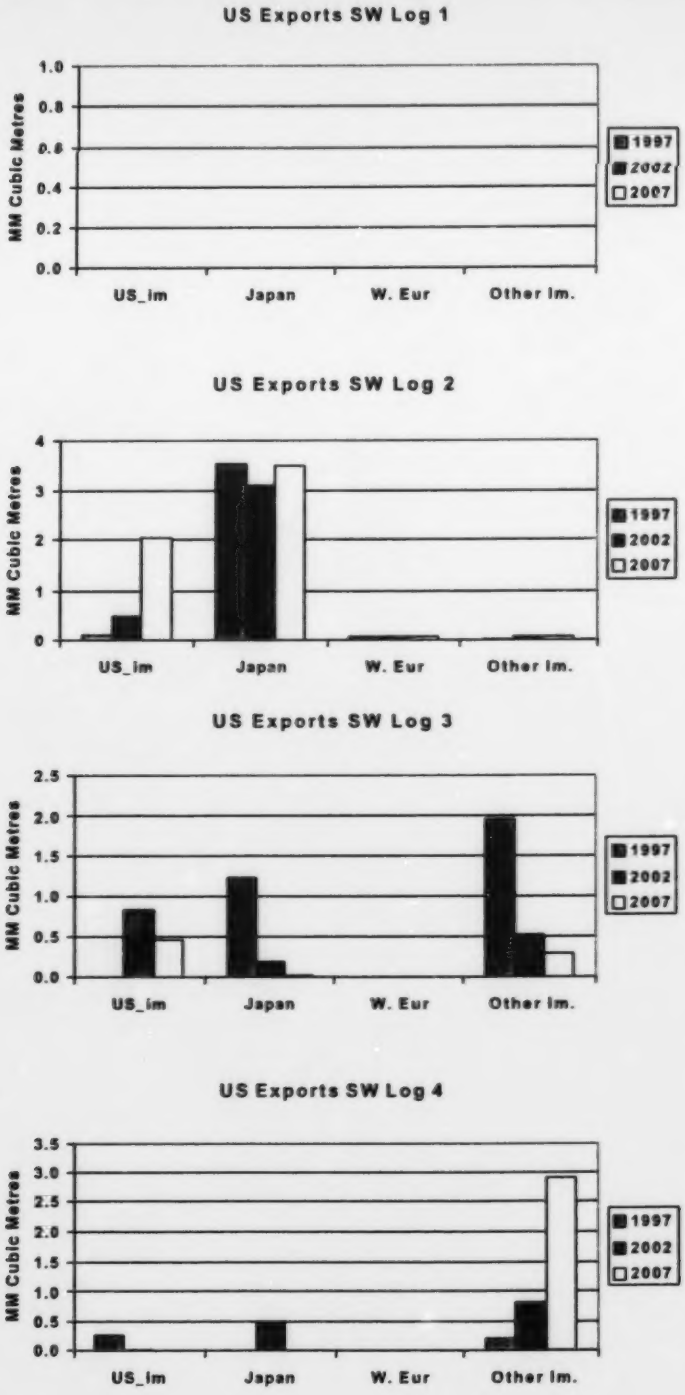
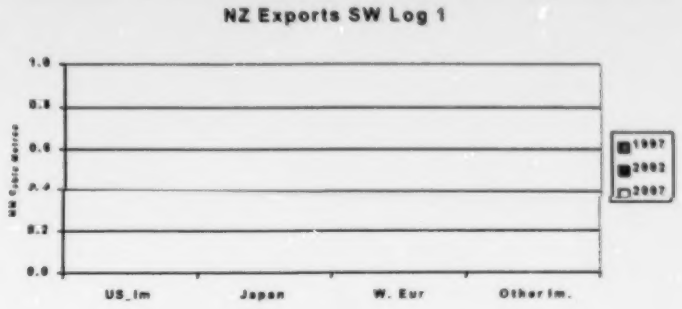
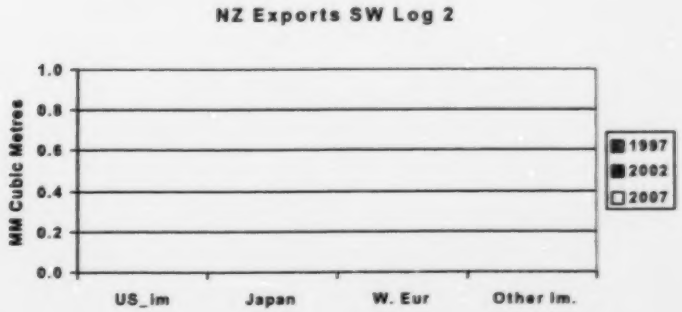


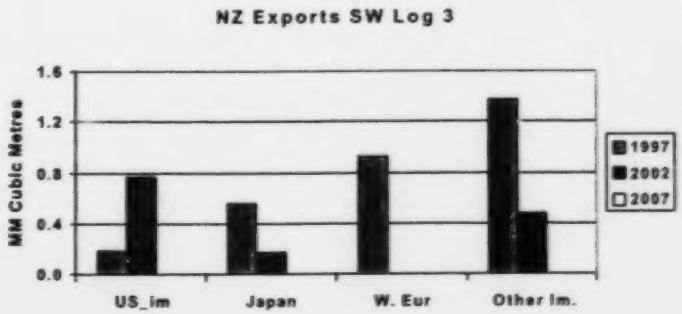
Figure 28.

1997, 2002, 2007
Projected Trade Flows

New Zealand Exports of Softwood Logs







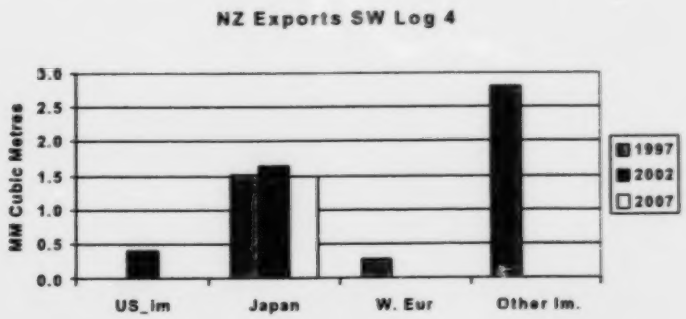
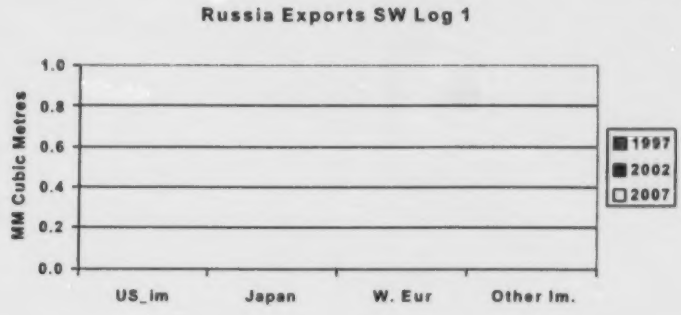
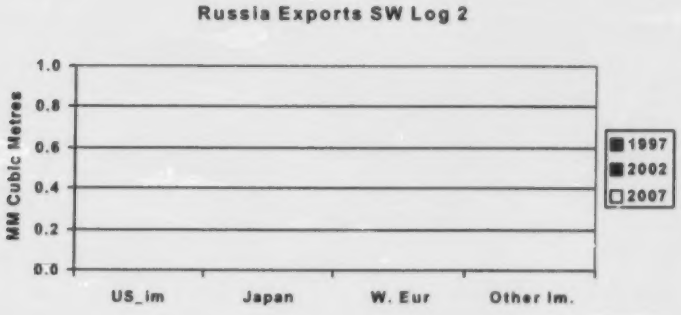


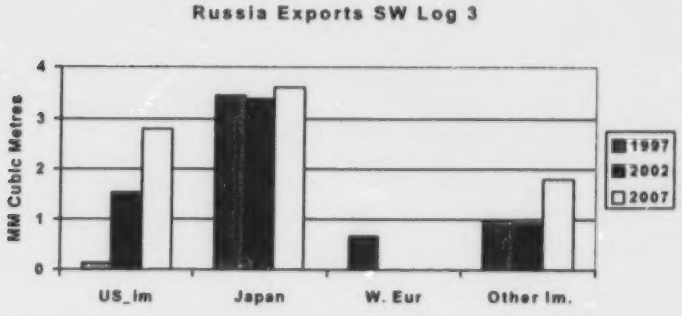
Figure 29.

1997, 2002, 2007
Projected Trade Flows

Russia Exports of Softwood Logs







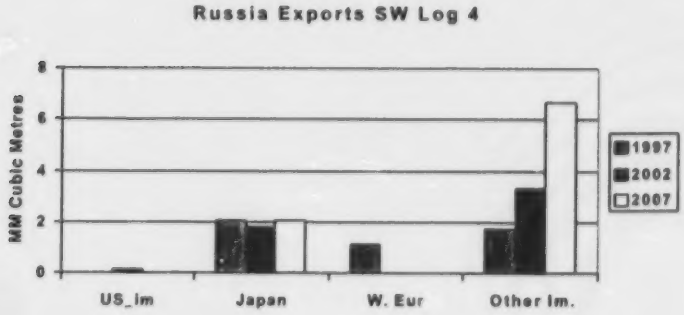
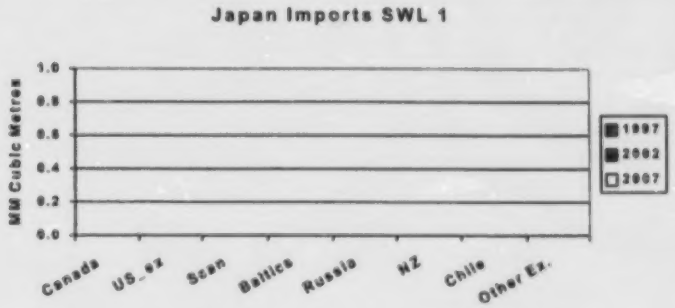
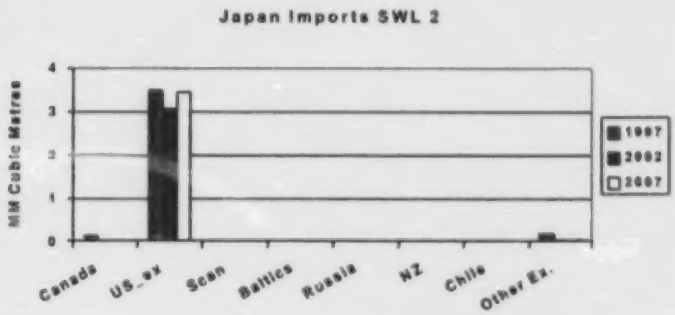


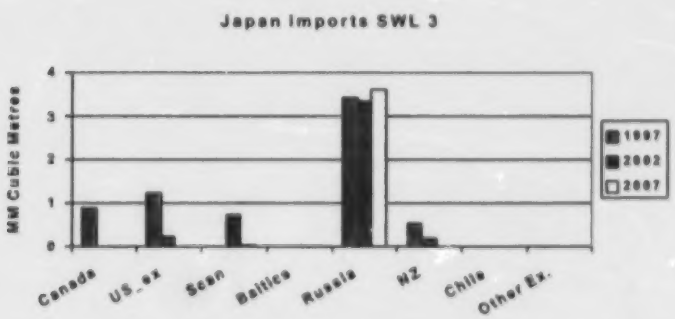
Figure 30.

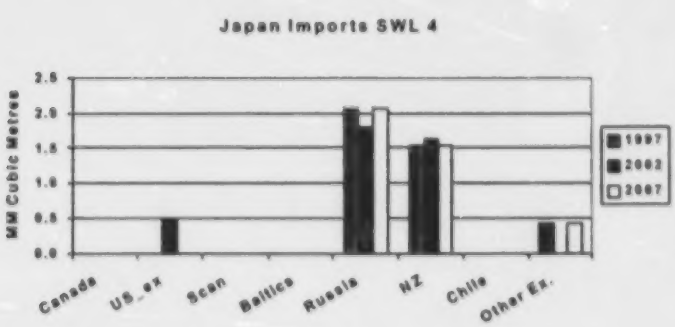
1997, 2002, 2007
Projected Trade Flows

Japan Imports of
Softwood Logs









5.3 The 2002 and 2007 Scenario Analyses

5.3.1 Scenario 1: Change Price Elasticity Assumption

The model's forecasts of global trade flows are dependent on inputted FOB and CIF prices, and price elasticities. To demonstrate this, the price elasticity of demand in Japan for softwood lumber #3 is changed in this scenario from -1.0 to -5.0 With this new assumption, a 1% decrease in price of softwood lumber #3 leads to a 5% increase in the quantity demanded.

As shown by Figure 30, this change in the assumed demand elasticity does rather significantly affect trade flows. In this particular case Japan's demand increases over the base-line forecast. Remember, there will be a drop in price of softwood lumber #3 in the base forecast due to the assumption of reduced demand in Japan due to decreased housing starts. With this scenario of a higher price elasticity, this price drop leads to a greater than proportional increase in quantity demanded. Interestingly, this increase in demand is largely from Scandinavia in this scenario, which in tern affects Scandinavian exports to Western Europe and "other demanders". The chain reaction continues, with Chile partially offsetting the changes in exports from Scandinavia.

While changes in elasticities will not typically be used for "what if" questions when addressing Canada's competitiveness in a category of softwood lumber, this scenario does demonstrate the model's sensitivity to, and therefore importance of, the initial elasticity assumptions.

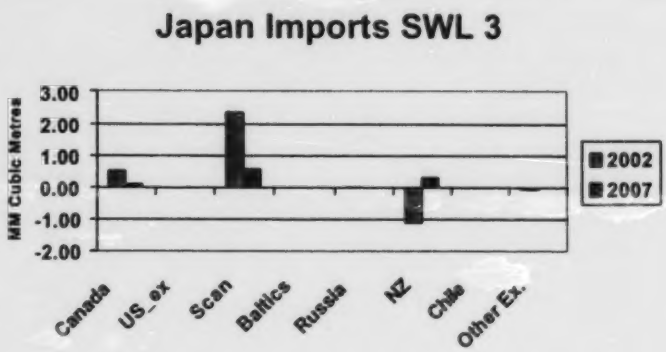
A note on reading the scenario figures:

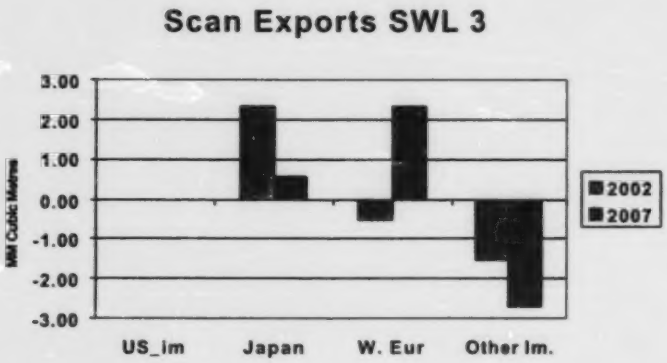
The remaining figures in this report show net change from the base case forecast, rather than actual trade flows. For example, as a result of this particular scenario, Scandianian trade to Japan of softwood lumber #3 increase by 2.4 million cubic metres for the 2002 forecast over the base case, and by roughly .5 million cubic metres for the 2007 forecast over the base case.

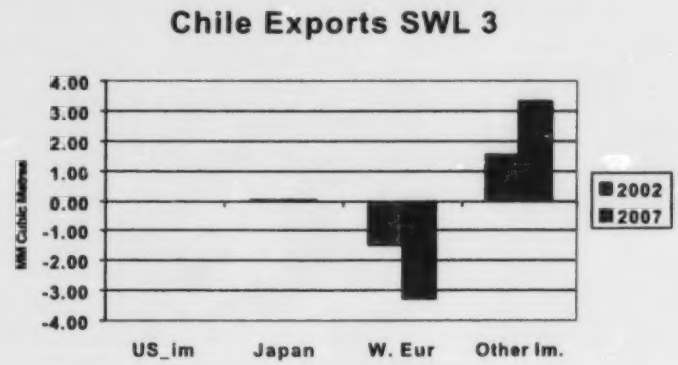
Figure 31.

2002, 2007
Trade Flow Changes

Scenario 1







5.3.2 Scenario 2: Challenge Zero Supply Growth for US Exporter Assumption

In this scenario, the base case forecast's assumption of no growth in the supply of softwood lumber #1 through #4 for US exporter is challenged. It is here assumed that there is a 2% annual increase in supply in all four lumber categories right through to 2007.

Figures 32 and 33 show the result. Not surprisingly, US exporter trade to US importer goes up rather dramatically for the US construction grade (softwood lumber #4), and mostly at the expense of Canadian supply. Because of the increased supply, price goes down and overall consumption of lumber in the US goes up; increased exports of softwood lumber #4 from US exporter to US importer is larger than the decrease in imports from Canada.

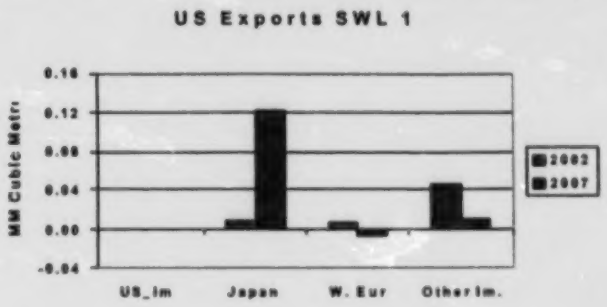
Note as well that the increased supply of the appearance grades for US exporter results in increased trade to Japan. Although not shown in these two figures, this is also largely at the expense of Canadian shipments.

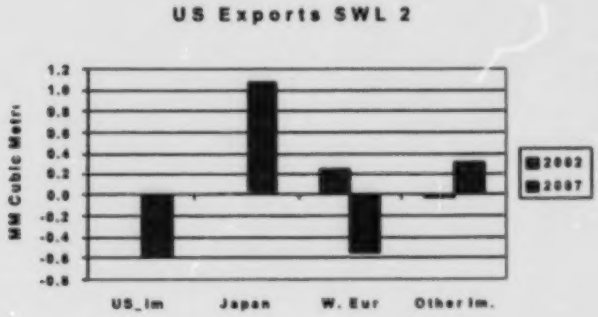
Figure 32.

2002, 2007
Trade Flow Changes

Scenario 2

US Exports of Softwood Lumber





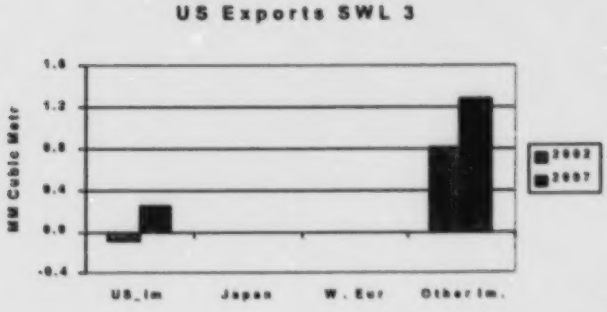
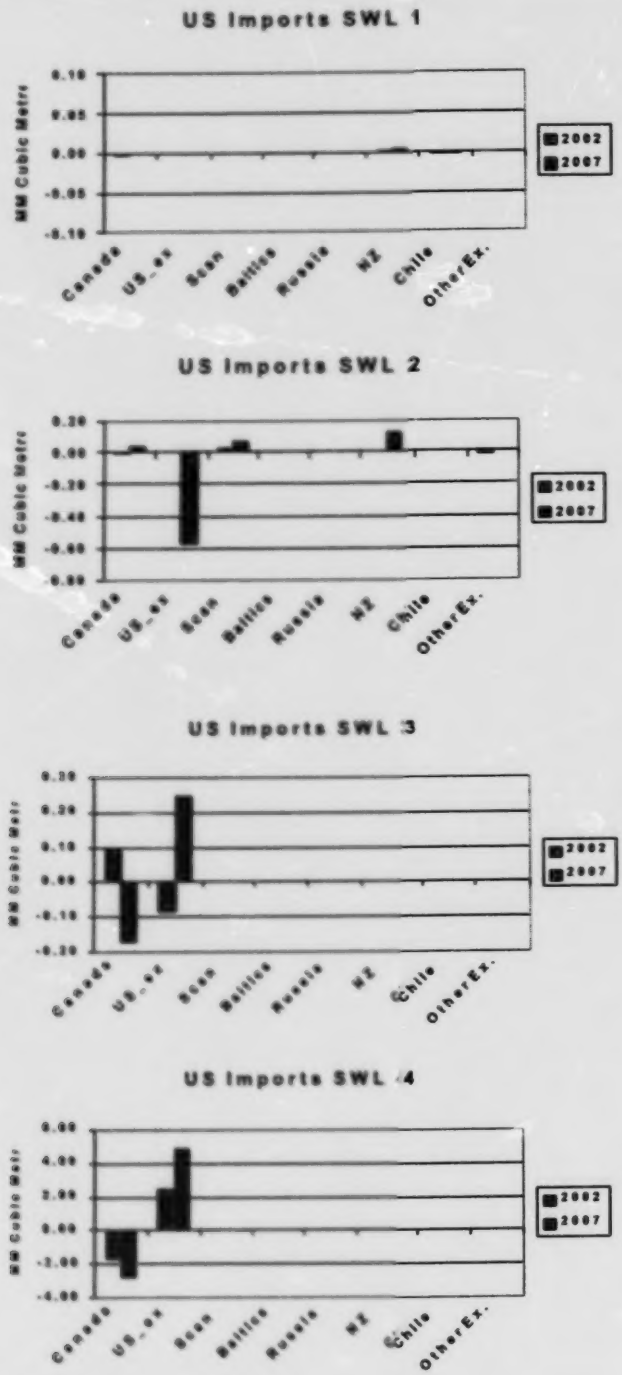


Figure 33.

2002, 2007
Trade Flow Changes

Scenario 2

US Imports of Softwood Lumber



5.3.3 Scenario 3: Russia Shock, Dramatic Increase in Softwood Lumber Supply

In this scenario, it is assumed that Russia manages to attract the needed capital to move toward its historical production levels. It is also assumed that domestic consumption rises accordingly.

Specifically, the model was shocked to include a 1997 to 2002 increase in Russia supply of 25% annually, and an increase demand of 10 % annually, for softwood lumber #1 through #4. From the period 2002 to 2007, the annual increases were put at 15% for supply and 20% for demand.

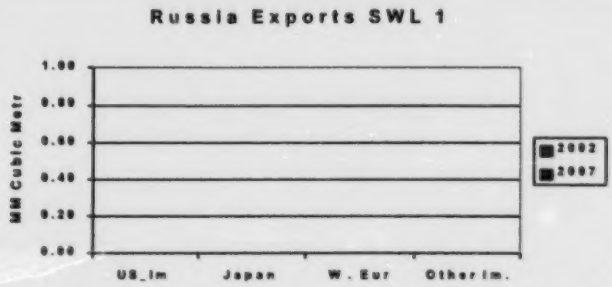
Figures 34 through 36 show the results. As would be expected, even substantial *percentage* increases in the appearance grades (softwood lumber #1 and #2) have little effect due to the negligible starting values. However, the softwood lumber #3 trade increase to Japan is considerable. Even more dramatic is the increase in trade of softwood lumber #4, with the main destination being US importer and "other" importer. Note from Figure 36 that the increase in imports from "other" is NOT a replacement from another supplier, rather increased consumption due to lower prices as a result of the dramatic increase in Russian supply of this category of lumber.

Figure 34.

2002, 2007
Trade Flow Changes

Scenario 3

Russia Exports of Softwood Lumber



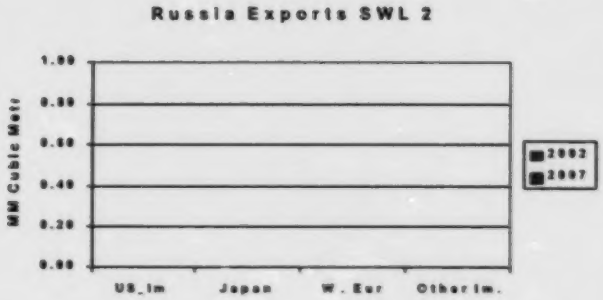
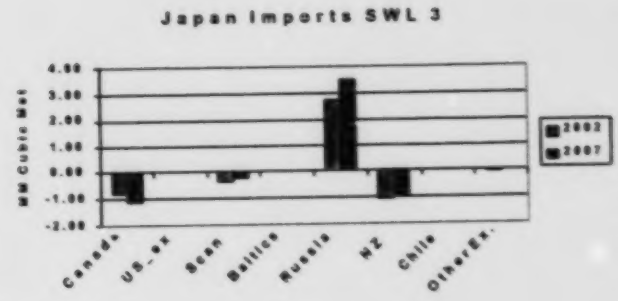


Figure 35.

2002, 2007
Trade Flow Changes

Scenario 3

Japan Imports of Softwood Lumber



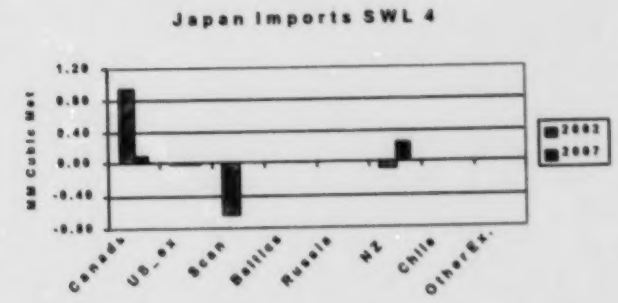
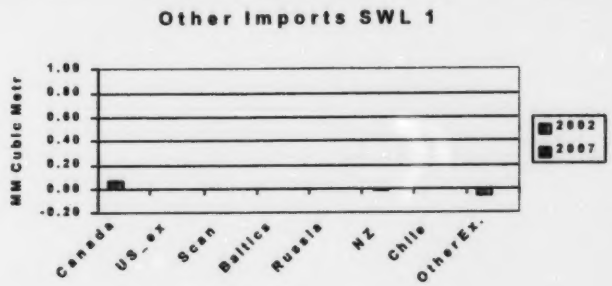


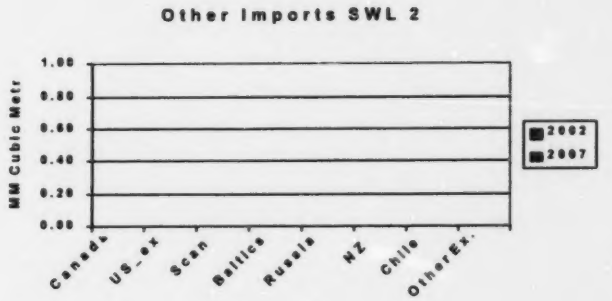
Figure 36.

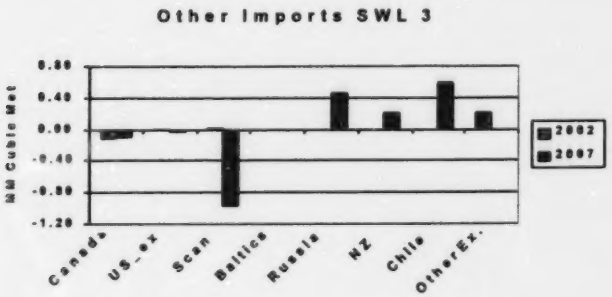
2002, 2007
Trade Flow Changes

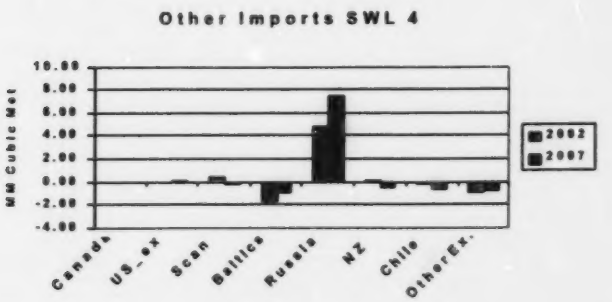
Scenario 3

"Other" Imports of Softwood Lumber









5.3.4 Scenario 4: Reduce Canada/US Quota to 10 Billion Board Feet

With this scenario, the existing constraint on the model on trade of Canadian dimension lumber to the US was reduced from 14.7 billion board feet to 10 billion board feet, to be in effect right through to 2007.

As shown in Figure 37, the result is predictable in terms of Canada/US trade. The reduction of roughly 8 million cubic metres for 2002 and 6 million cubic metres in 2007 reflect Canada/US trade at exactly the new quota level of 10 mmbf (or 23.6 million cubic metres).

As shown in Figure 38, this reduction in Canadian supply of softwood lumber #4 is off set to some degree with increased US imports from all of the other supply areas, including US exporter. However, this offset is far from complete, meaning that the main result of the reduced quota is lower consumption in the US, due in part to the quota itself and in part to somewhat higher prices. In other words, the main losers as a result of the reduced quota are the Canadian producer and the US consumer. Canada production of softwood lumber #4 is projected to drop by 4.5 million cubic metres, and domestic consumption increased by nearly 2 million cubic metres.

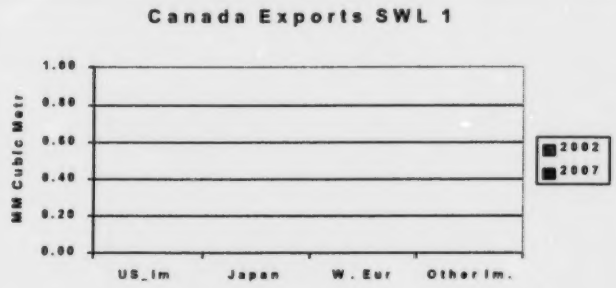
Note: with this scenario, it was assumed that only softwood lumber #4 is affected by the quota reduction. If in fact the quota is expanded to include softwood products beyond dimension lumber, softwood lumber #3 would also be affected. This could be simulated with a further scenario.

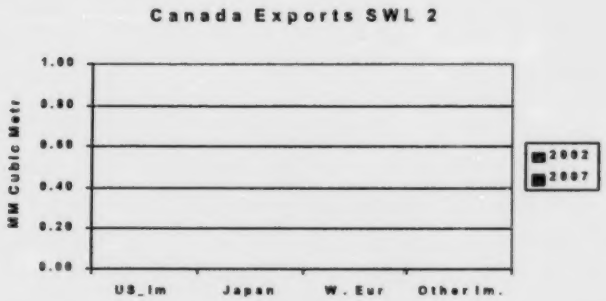
Figure 37.

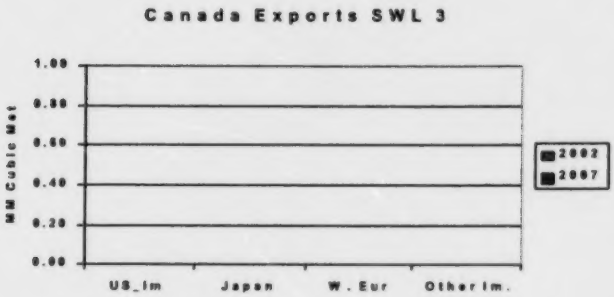
2002, 2007
Trade Flow Changes

Scenario 4

Canada Exports of Softwood Lumber







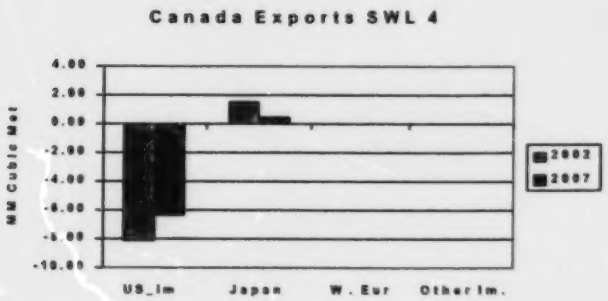
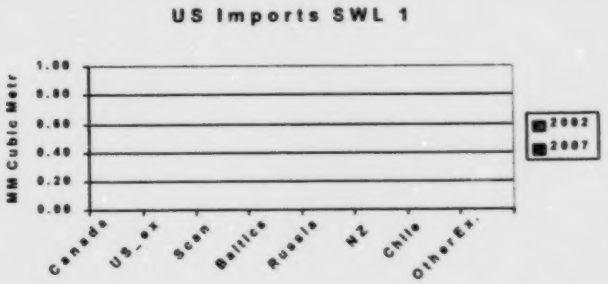


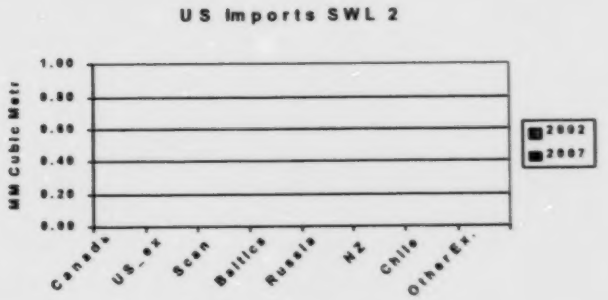
Figure 38.

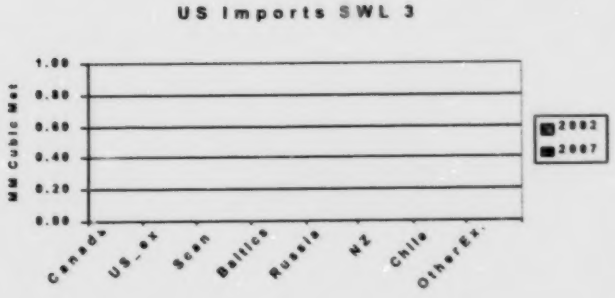
2002, 2007
Trade Flow Changes

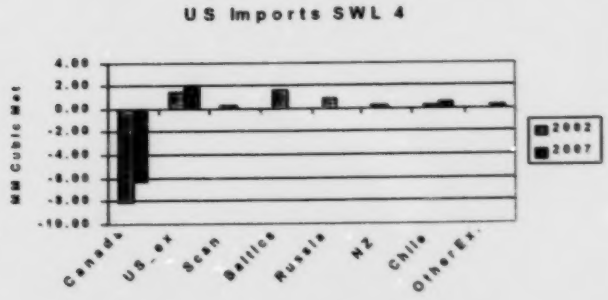
Scenario 4

US Imports of
Softwood Lumber









5.3.5 Scenario 5: Reduce Scandinavian Currency Relative to Competing Exporters to Japan

For this scenario, transportation cost for softwood lumber #1 to #4 were reduced my US $10 per cubic metre, simulating the effect of a reduction in Scandinavian currency relative to competing exporters.

As shown in Figure 39, the direction of the result is as one would expect, showing increased Scandinavian exports to Japan, particularly with it's main product, softwood lumber #3. Shipments increased by roughly 5 million cubic metres, initially at the expense of shipments to Western Europe, then at the expense of shipments to "other" importers. Softwood lumber #4 shipments to Japan also increased, all at the expense of shipments to "other" importers.

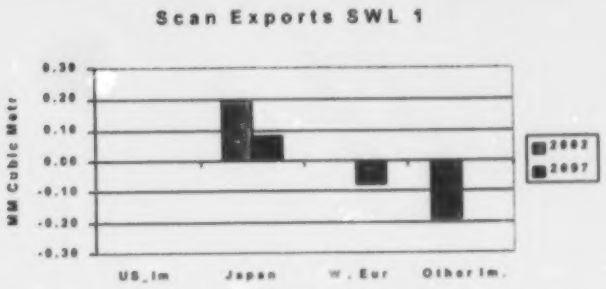
Figure 40 shows that the increased trade of lumber from Scandinavia to Japan as a result of this scenario is primarily at the expense of Canadian shipments to Japan, followed by New Zealand.

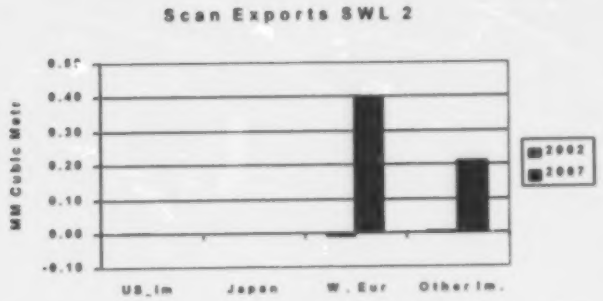
Figure 39.

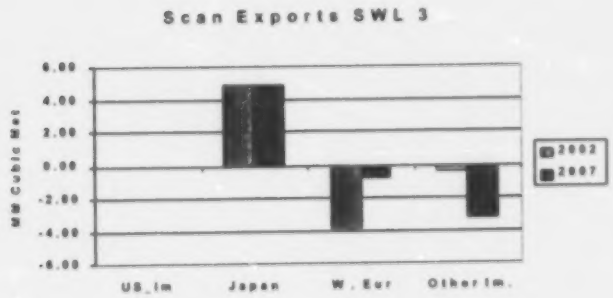
2002, 2007
Trade Flow Changes

Scenario 5

Scandinavia Exports of Softwood Lumber







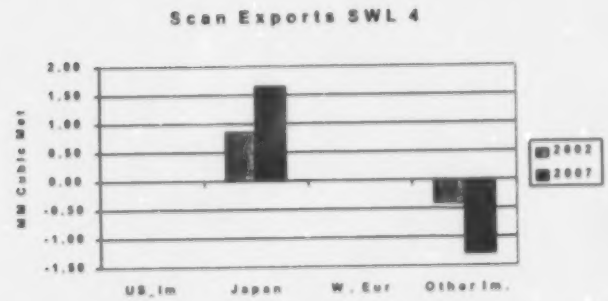
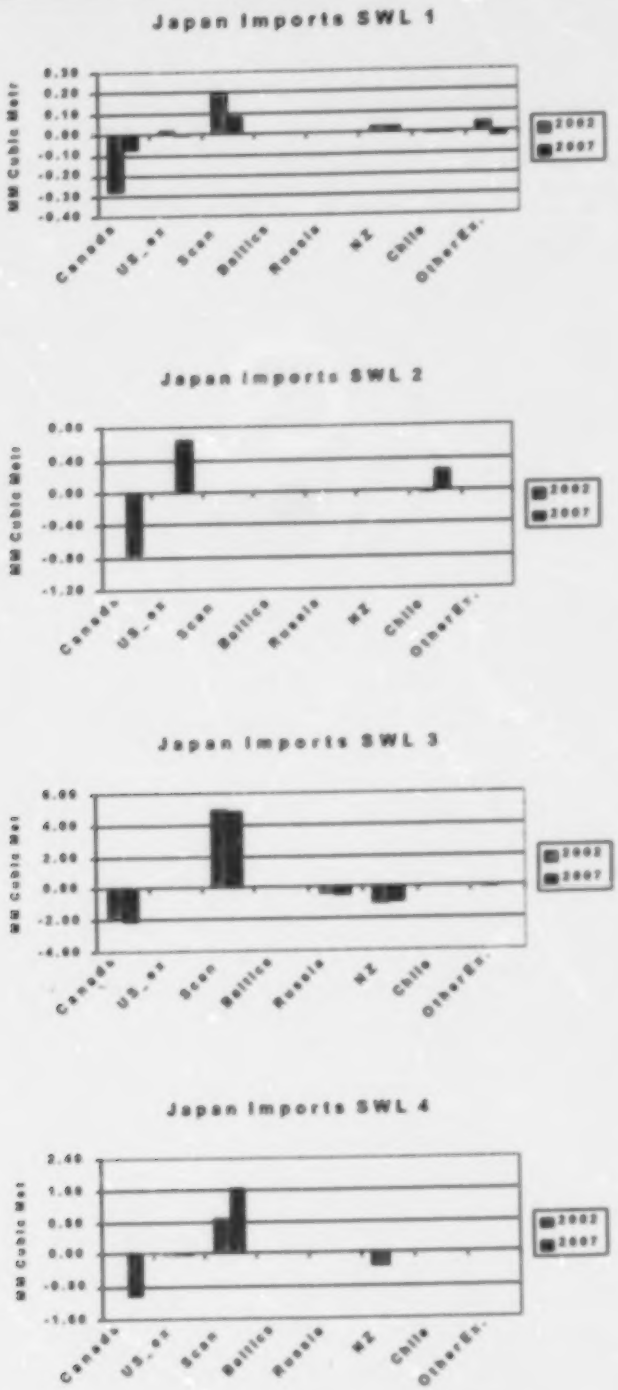


Figure 40.

2002, 2007
Trade Flow Changes

Scenario 5

Japan Imports of Softwood Lumber



5.1.6 Scenario 6: Increase "Other" Demand for Softwood Lumber #3 and #4

One of the global changes that softwood lumber exporters are all hoping for is that emerging Pacific Rim countries such as China, Taiwan, Thailand and even India increase their demand for wood products. The reason for such optimism includes growing per capita income, small per capita domestic wood supplies, and tremendous housing deficits. This scenario shows predicted trade flow results of an initial 10 percent annual increase in the demand for softwood lumber # 3 and #4 for "other" demander (all countries except the US, Japan and Western Europe), and a 20 percent annual increase in demand from 2002 to 2007.

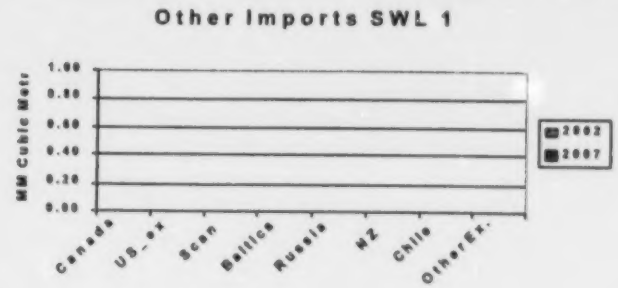
The results are shown in Figures 41 and 42. It is interesting to note that this increased demand does **not** much affect Canada or the US. Rather, the increased demand for softwood lumber #3 is primarily provided by Scandinavia and Chile (both at the expense of trade to Western Europe), and for softwood lumber #4 from Russia and "other" exporters. While the increased global demand for these lumber categories did increase prices, Canada/US trade was little affected.

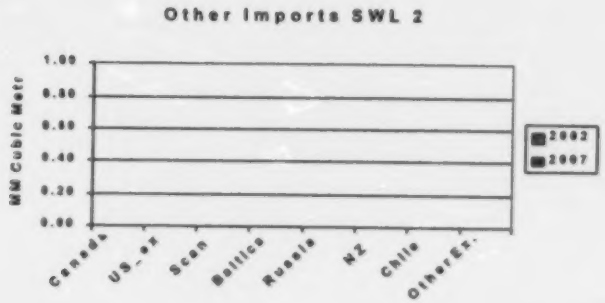
Figure 41.

2002, 2007
Trade Flow Changes

Scenario 6

"Other" Imports of Softwood Lumber





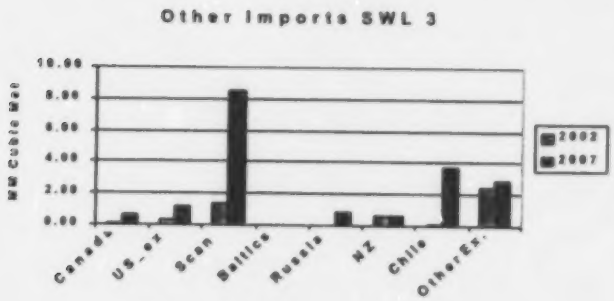
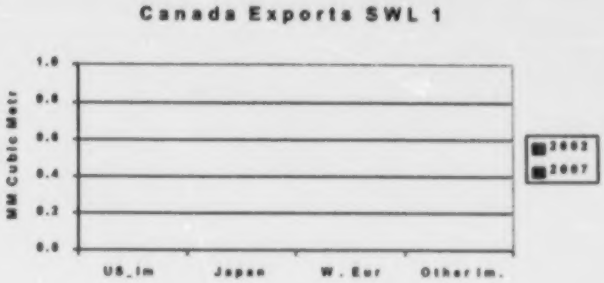


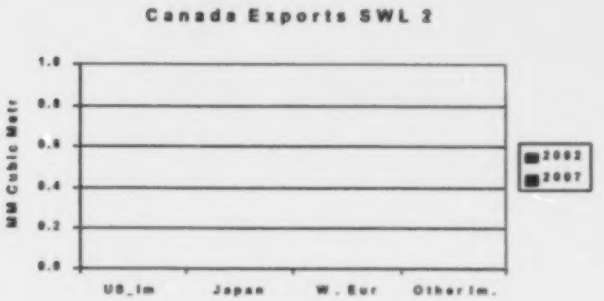
Figure 42.

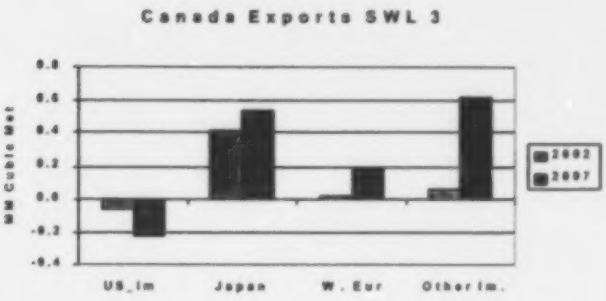
2002, 2007
Trade Flow Changes

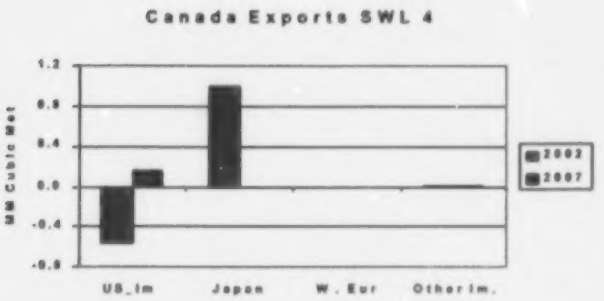
Scenario 6

Canada Exports of Softwood Lumber









6 Conclusions

It has been shown in this study that it is possible to disaggregate international trade data for softwood lumber and softwood logs into baskets of "like" commodities for the purposes of trade forecasting. The results presented in this report clearly demonstrate the value of moving away from too broad of an aggregate, such as all combined softwood lumber.

The model that has been developed will be applied to the final stage of the Japan study, being the linkage analysis. In the last of a set of reports, *Japan's Value Added Market: Wood Products Marketing and Competition–The Linkage Analysis* will report on the use of the trade model in helping identify competitive advantages and threats to categories of Canadian products identified for the Japanese market.

In addition to reporting on a number of combined scenarios to address the competitive position of selected Canadian products in Japan, a number of "what-if scenarios are reported on that help paint the picture of anticipated wood product supply and demand trends.

Appendix One

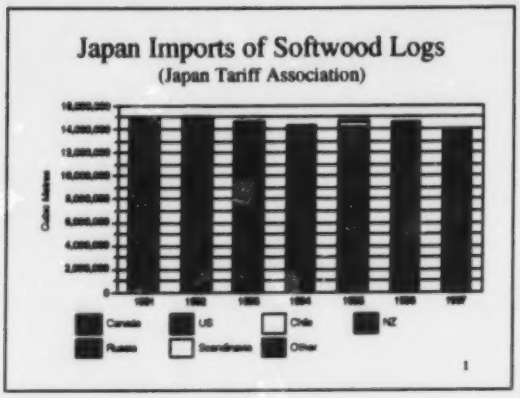
Trade Flow Quantity and Unit Value Charts

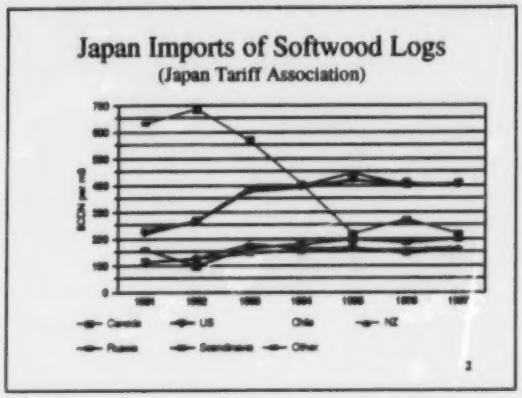
for

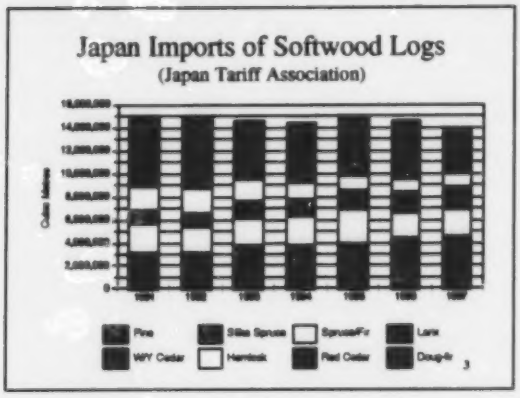
Softwood Logs
and
Wood-Based Panels

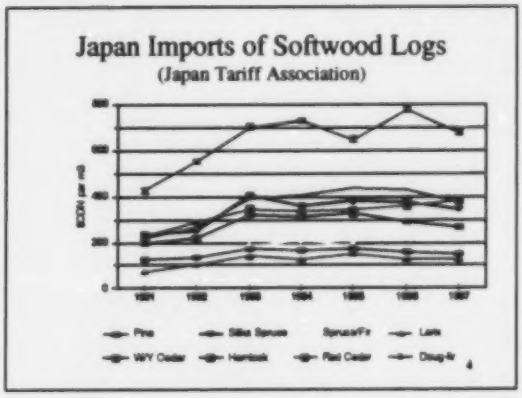
Trade Flow graphs for softwood lumber and selected further processed products are available in

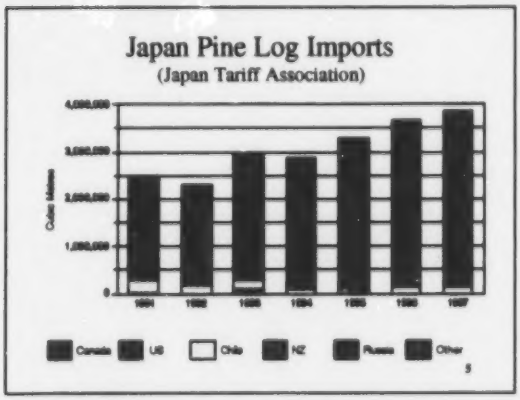
Japan's Value Added Market:
Wood Product Attributes and Competition
Competitor Analysis One.

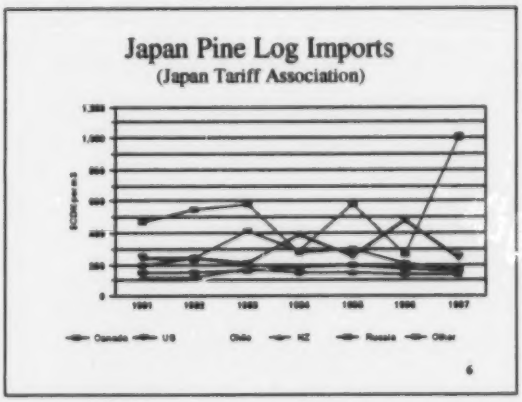

Japan Imports of Softwood Logs
(Japan Tariff Association)
Cubic Metres
Canada
US
Chile
NZ
Russia
Scandinavia
Other
1

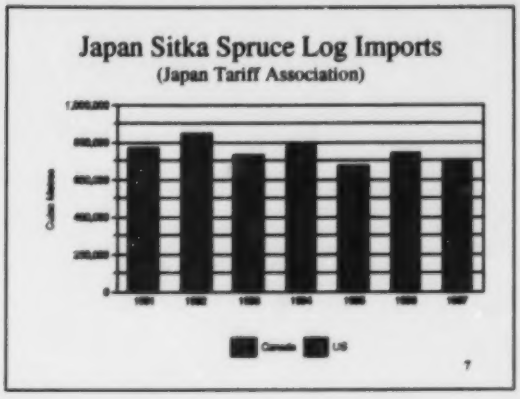

Japan Imports of Softwood Logs
(Japan Tariff Association)
ECDN per m3
Canada
US
Chile
NZ
Russia
Scandinavia
Other
2

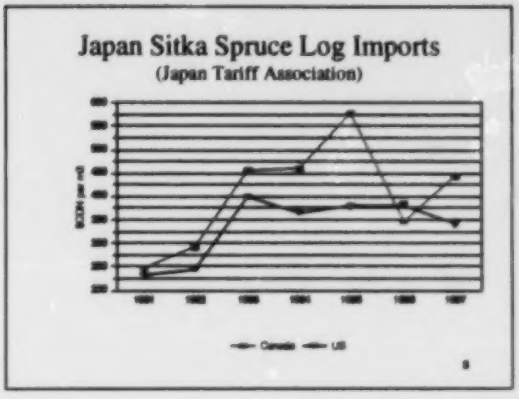

Japan Imports of Softwood Logs
(Japan Tariff Association)
Cubic Metres
Pine
Sitka Spruce
Spruce/Fir
Lark
W/Y Cedar
Hemlock
Red Cedar
Doug-fir
3

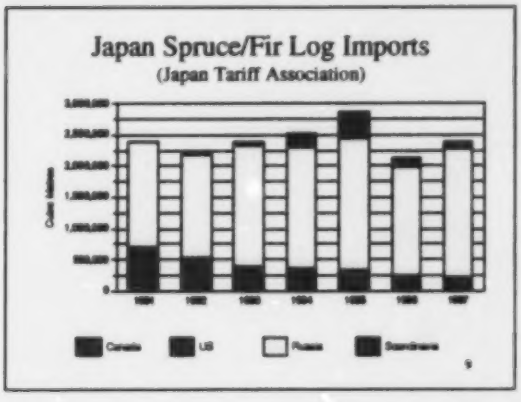

Japan Imports of Softwood Logs
(Japan Tariff Association)
ECDN per m3
Pine
Sitka Spruce
Spruce/Fir
Lark
W/Y Cedar
Hemlock
Red Cedar
Doug-fir
4

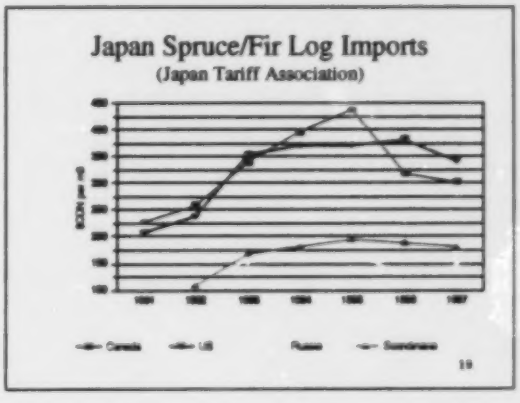

Japan Pine Log Imports
(Japan Tariff Association)
Cubic Metres
Canada
US
Chile
NZ
Russia
Other
5

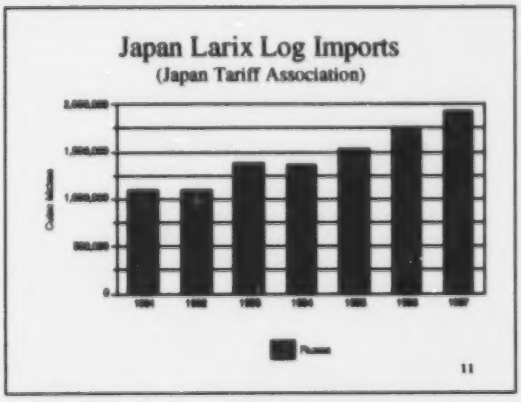

Japan Pine Log Imports
(Japan Tariff Association)
ECDN per m3
Canada
US
Chile
NZ
Russia
Other
6

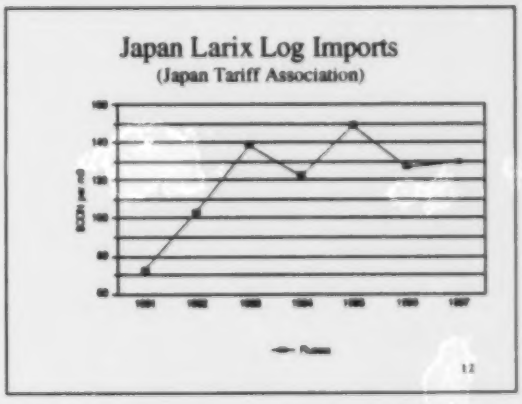

Japan Sitka Spruce Log Imports
(Japan Tariff Association)
Cubic Meters
Canada
US
7


Japan Sitka Spruce Log Imports
(Japan Tariff Association)
Canada
US
8

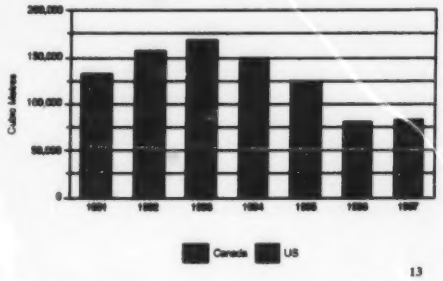

Japan Spruce/Fir Log Imports
(Japan Tariff Association)
Cubic Meters
Canada
US
Russia
Scandinavia
9


Japan Spruce/Fir Log Imports
(Japan Tariff Association)
Canada
US
Russia
Scandinavia
10


Japan Larix Log Imports
(Japan Tariff Association)
Cubic Meters
Russia
11

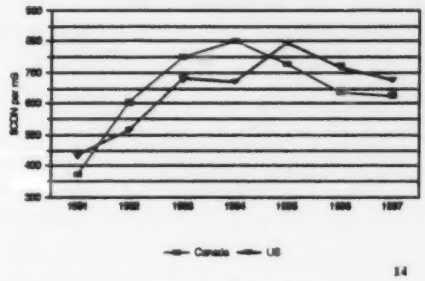

Japan Larix Log Imports
(Japan Tariff Association)
Russia
12

Japan Yellow Cedar Log Imports
(Japan Tariff Association)



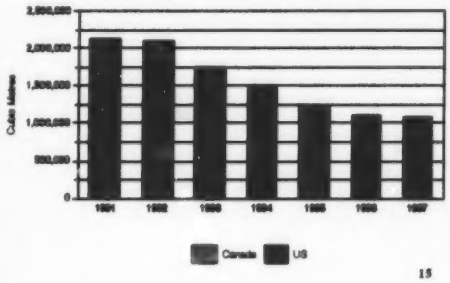
13

Japan Yellow Cedar Log Imports
(Japan Tariff Association)



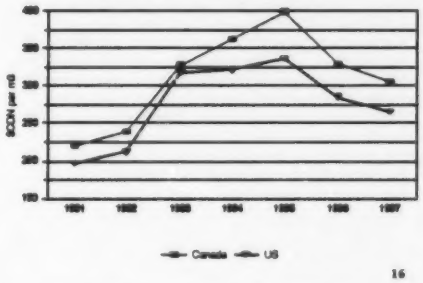
14

Japan Hemlock Log Imports
(Japan Tariff Association)



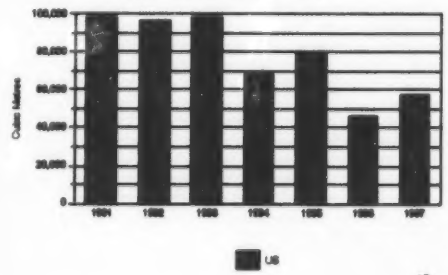
15

Japan Hemlock Log Imports
(Japan Tariff Association)



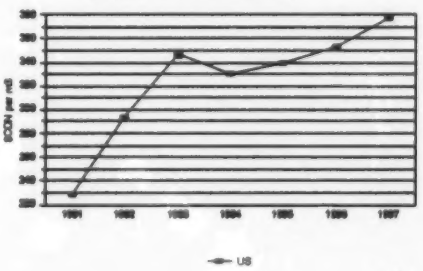
16

Japan Red Cedar Log Imports
(Japan Tariff Association)



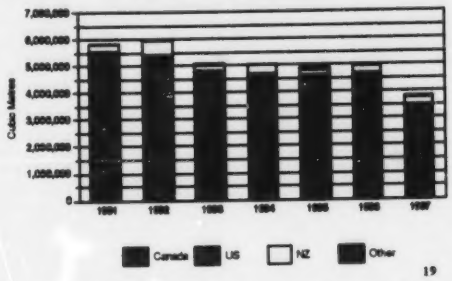
17

Japan Red Cedar Log Imports
(Japan Tariff Association)



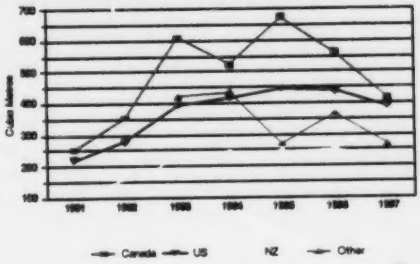
18

Japan Douglas-Fir Log Imports
(Japan Tariff Association)



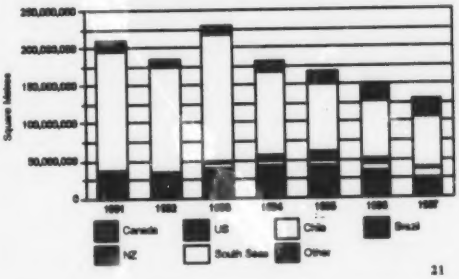
19

Japan Douglas-Fir Log Imports
(Japan Tariff Association)



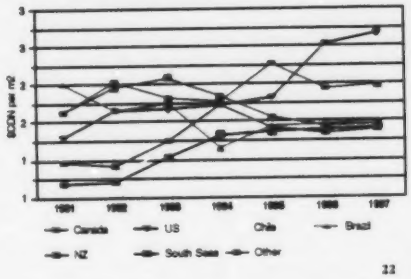
20

Japan Veneer Sheet Imports
(Japan Tariff Association)



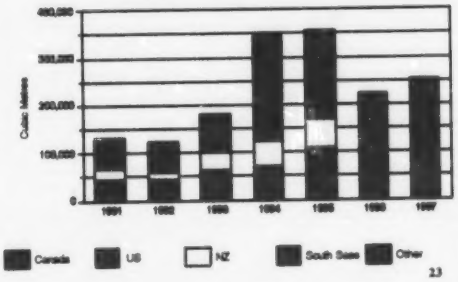
21

Japan Veneer Sheet Imports
(Japan Tariff Association)



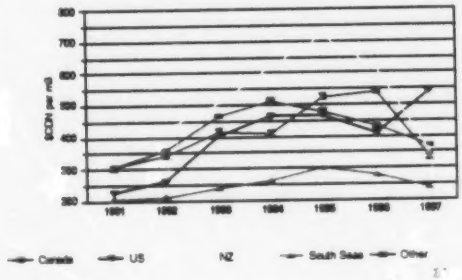
22

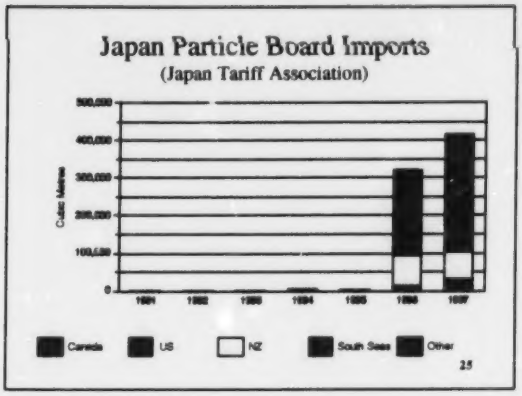
Japan OSB Imports
(Japan Tariff Association)

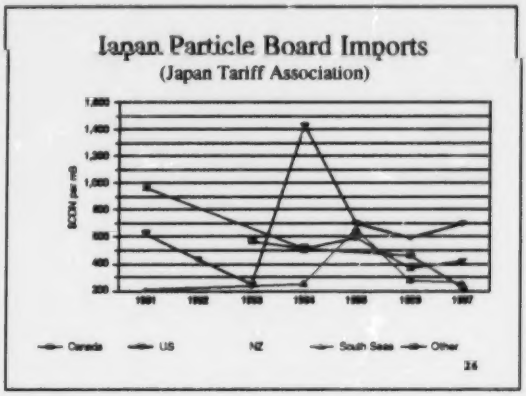


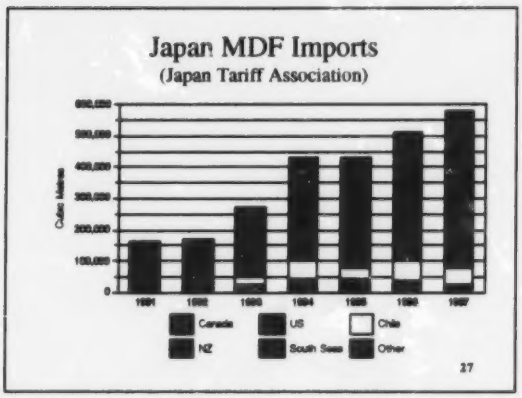
23

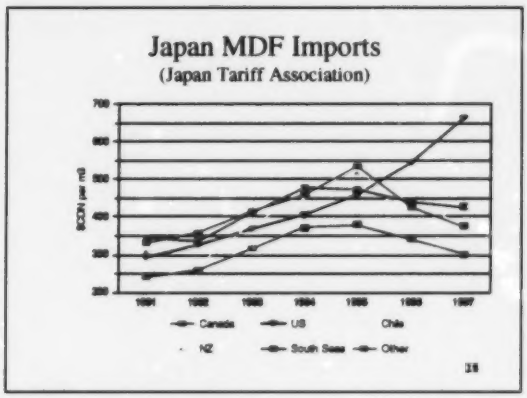
Japan OSB Imports
(Japan Tariff Association)

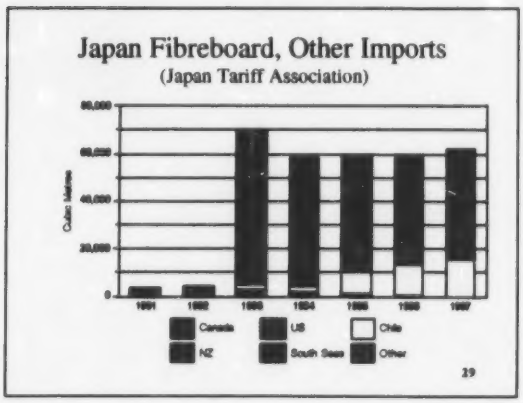


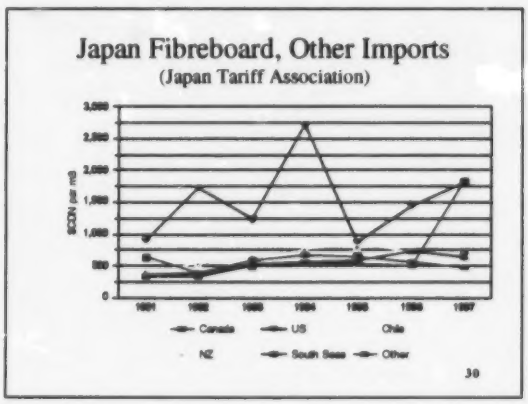

Japan Particle Board Imports
(Japan Tariff Association)
Cubic Metres
Canada
US
NZ
South Seas
Other
25


Japan Particle Board Imports
(Japan Tariff Association)
$CDN per m3
Canada
US
NZ
South Seas
Other
26

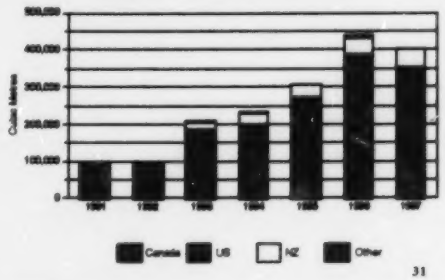

Japan MDF Imports
(Japan Tariff Association)
Cubic Metres
Canada
US
Chile
NZ
South Seas
Other
27


Japan MDF Imports
(Japan Tariff Association)
$CDN per m3
Canada
US
Chile
NZ
South Seas
Other
28


Japan Fibreboard, Other Imports
(Japan Tariff Association)
Cubic Metres
Canada
US
Chile
NZ
South Seas
Other
29

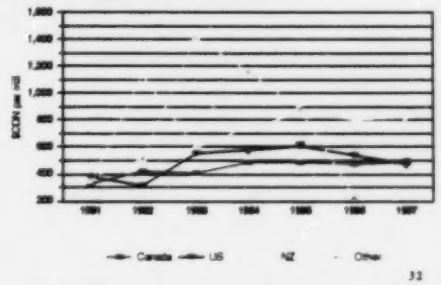

Japan Fibreboard, Other Imports
(Japan Tariff Association)
$CDN per m3
Canada
US
Chile
NZ
South Seas
Other
30

Japan Softwood Plywood Imports
(Japan Tariff Association)



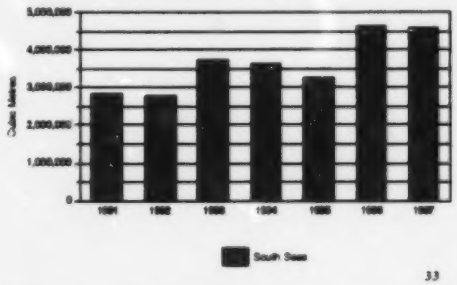
31

Japan Softwood Plywood Imports
(Japan Tariff Association)



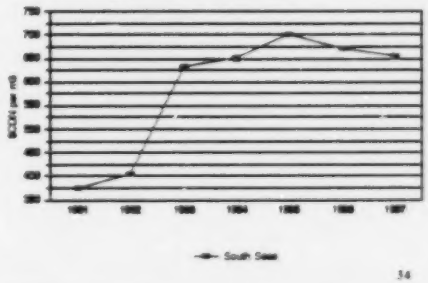
32

Japan Hardwood Plywood Imports
(Japan Tariff Association)



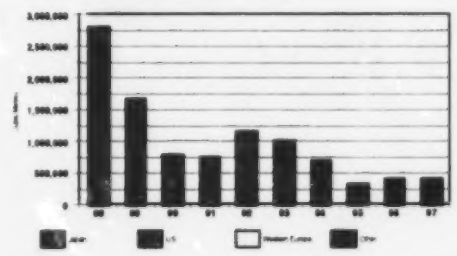
33

Japan Hardwood Plywood Imports
(Japan Tariff Association)



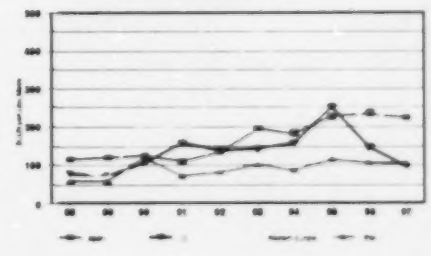
34

Canada Softwood Log Exports
(Statistics Canada)



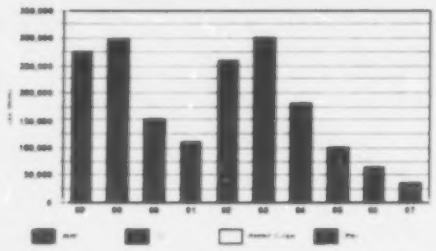
35

Canada Softwood Log Exports
(Statistics Canada)



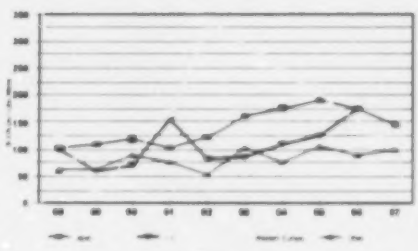
36

Canada Hemlock Log Exports
(Statistics Canada)



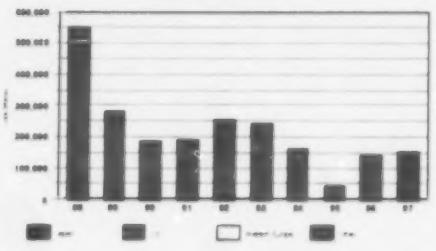
37

Canada Hemlock Log Exports
(Statistics Canada)



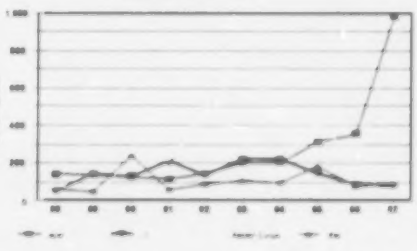
38

Canada Spruce Log Exports
(Statistics Canada)



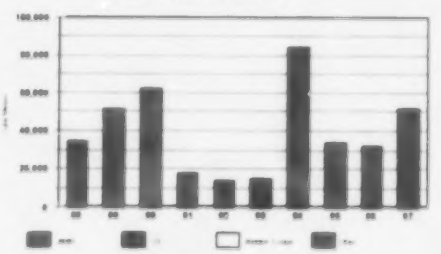
39

Canada Spruce Log Exports
(Statistics Canada)



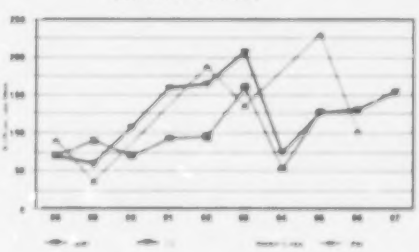
40

Canada Pine Log Exports
(Statistics Canada)



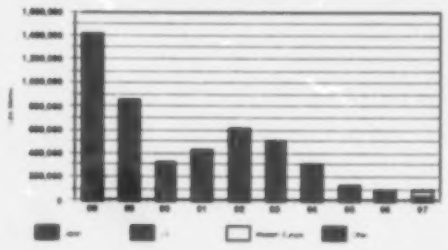
41

Canada Pine Log Exports
(Statistics Canada)



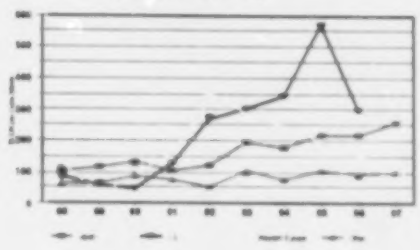
42

Canada True-Fir Log Exports
(Statistics Canada)



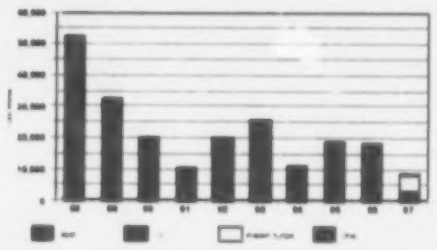
43

Canada True-Fir Log Exports
(Statistics Canada)



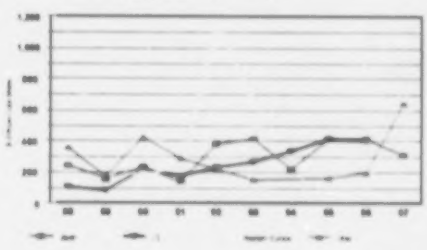
44

Canada Cedar Log Exports
(Statistics Canada)



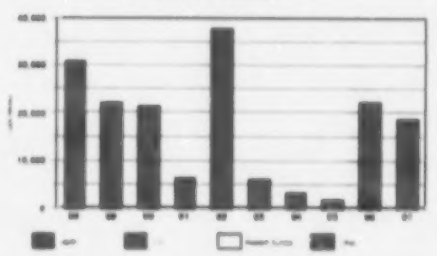
45

Canada Cedar Log Exports
(Statistics Canada)



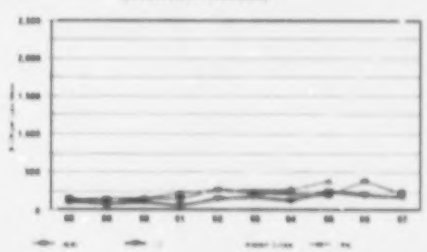
46

Canada Douglas-Fir Log Exports
(Statistics Canada)



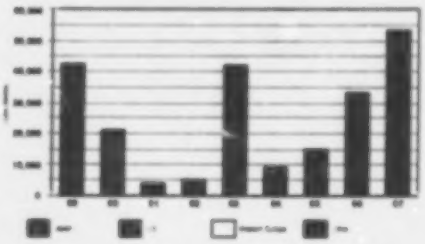
47

Canada Douglas-Fir Log Exports
(Statistics Canada)

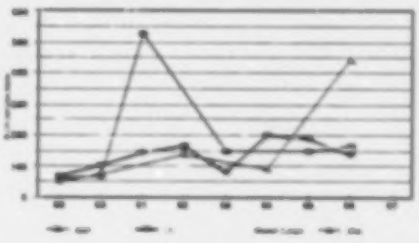


48

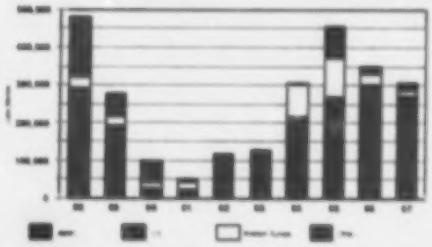
Canada "Other" Log Exports
(Statistics Canada)



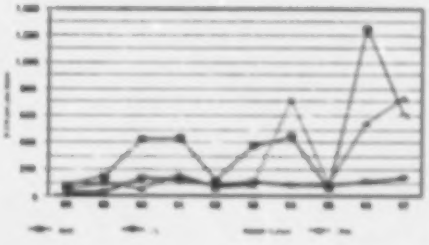
Canada "Other" Log Exports
(Statistics Canada)



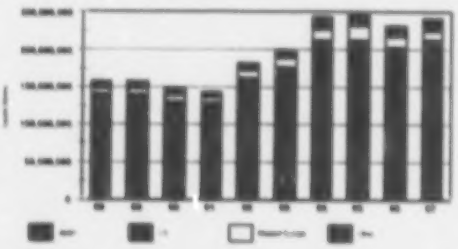
Canada Hardwood Log Exports
(Statistics Canada)



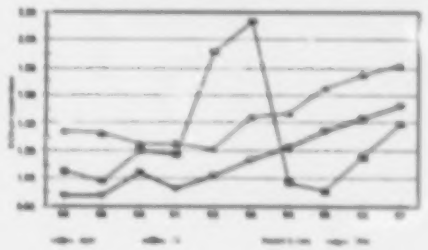
Canada Hardwood Log Exports
(Statistics Canada)



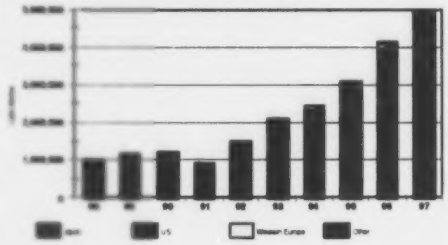
Canada Veneer Exports
(Statistics Canada)



Canada Veneer Exports
(Statistics Canada)

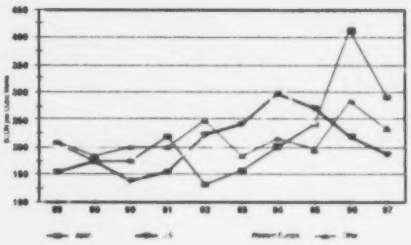


Canada OSB Exports
(Statistics Canada)



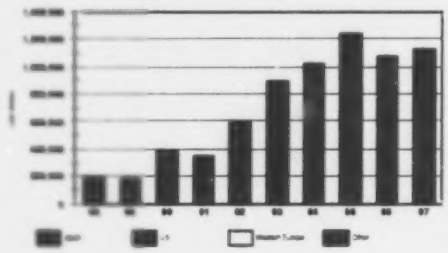
55

Canada OSB Exports
(Statistics Canada)



56

Canada Particle Board Exports
(Statistics Canada)



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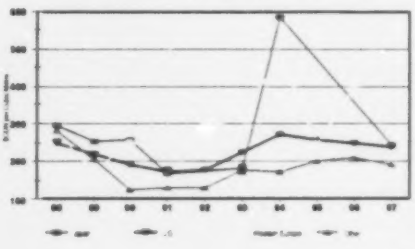
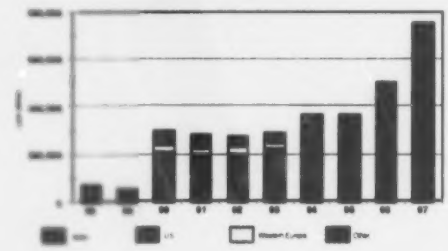
Canada Particle Board Exports
(Statistics Canada)



58

Canada Fibreboard Exports
(Statistics Canada)



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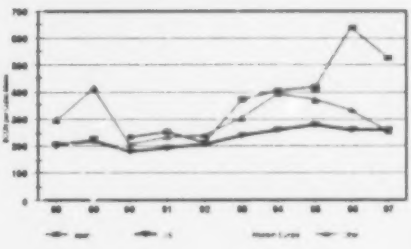
Canada Fibreboard Exports
(Statistics Canada)



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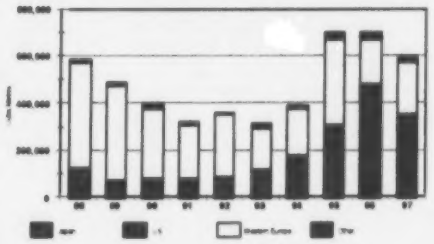
Canada Softwood Plywood Exports
(Statistics Canada)



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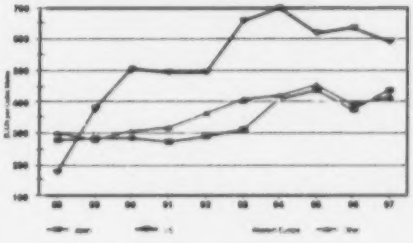
Canada Softwood Plywood Exports
(Statistics Canada)



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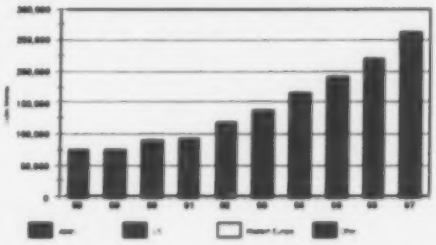
Canada Hardwood Plywood Exports
(Statistics Canada)



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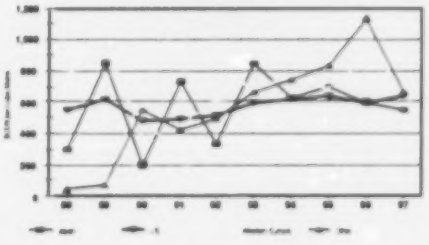
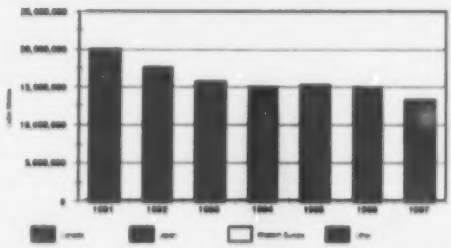
(Statistics Canada)



64

US Softwood Log Exports
(US Bureau of Census)



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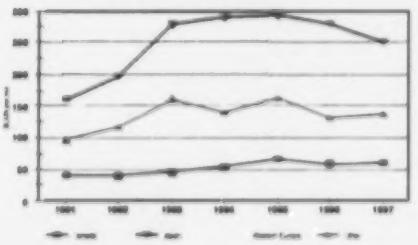
US Softwood Log Exports
(US Bureau of Census)



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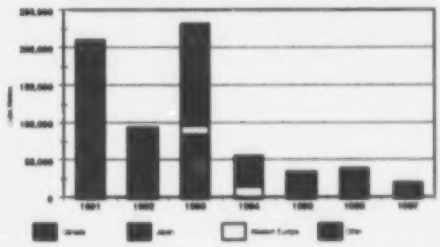
US Southern Yellow Pine Log Exports
(US Bureau of Census)



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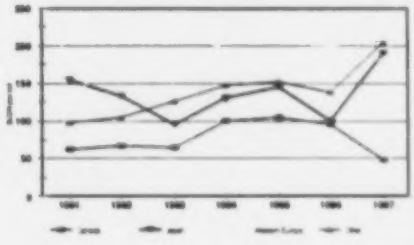
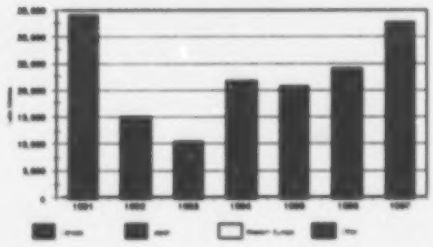
US Southern Yellow Pine Log Exports
(US Bureau of Census)



68

US Ponderosa Pine Log Exports
(US Bureau of Census)



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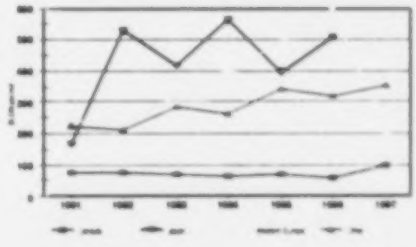
US Ponderosa Pine Log Exports
(US Bureau of Census)



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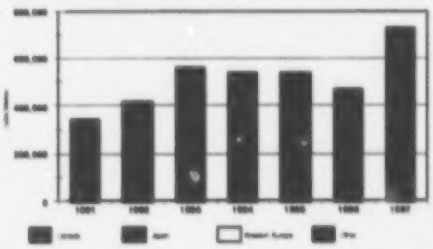
US Pine, "Other" Log Exports
(US Bureau of Census)



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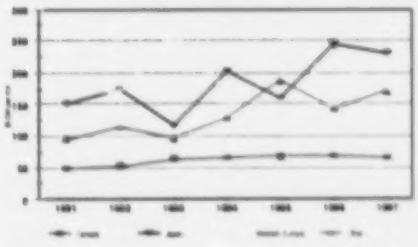
US Pine, "Other" Log Exports
(US Bureau of Census)



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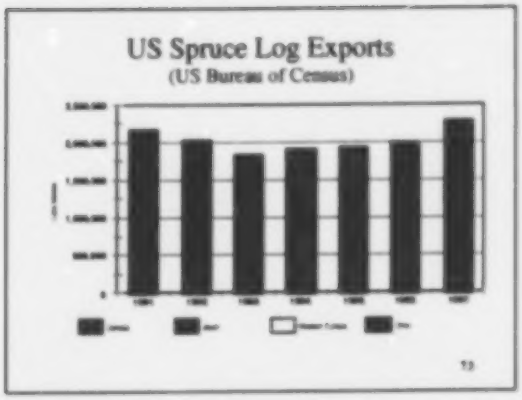
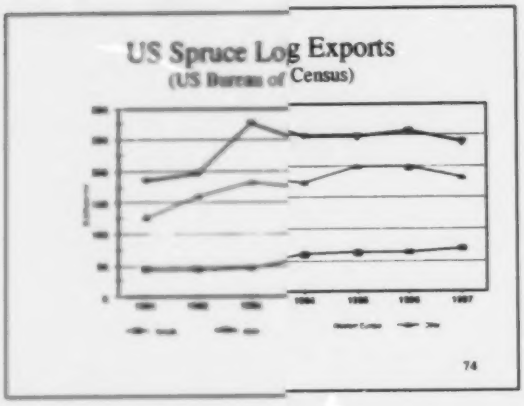
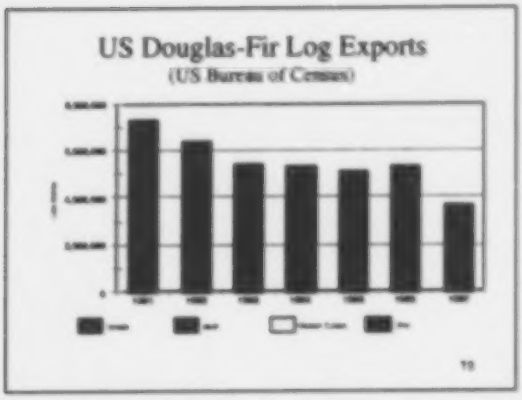
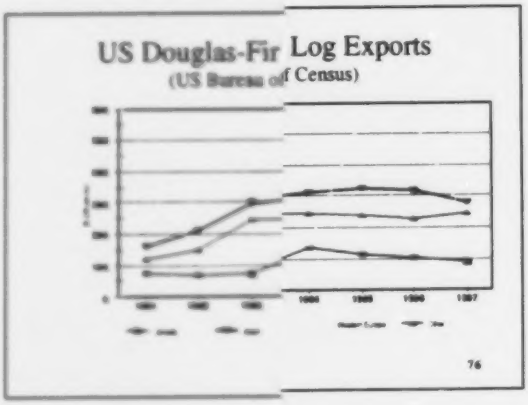
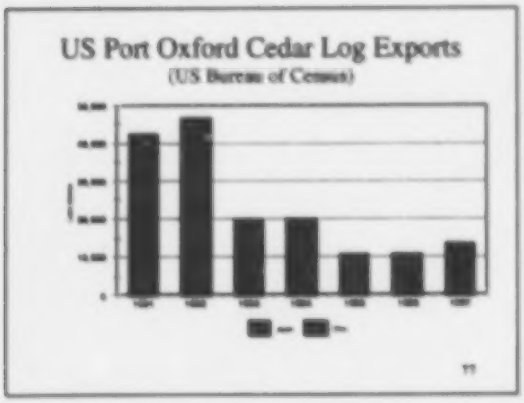
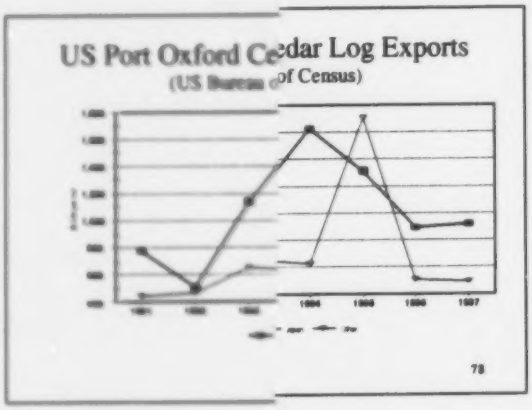

US Spruce Log Exports
(US Bureau of Census)


US Spruce Log Exports
(US Bureau of Census)

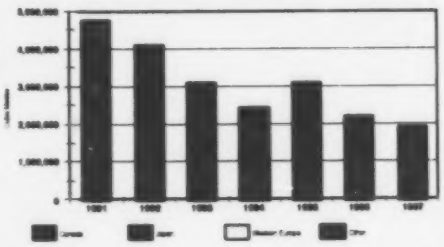

US Douglas-Fir Log Exports
(US Bureau of Census)


US Douglas-Fir Log Exports
(US Bureau of Census)


US Port Oxford Cedar Log Exports
(US Bureau of Census)


US Port Oxford Cedar Log Exports
(US Bureau of Census)

US Western Hemlock Log Exports
(US Bureau of Census)



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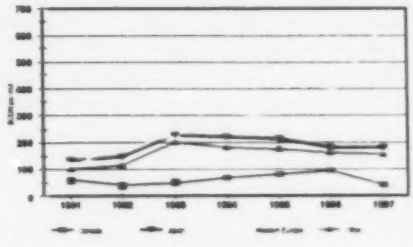
US Western Hemlock Log Exports
(US Bureau of Census)



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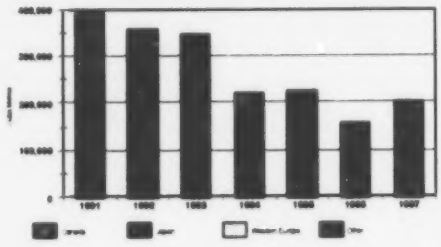
US Western Red Cedar Log Exports
(US Bureau of Census)



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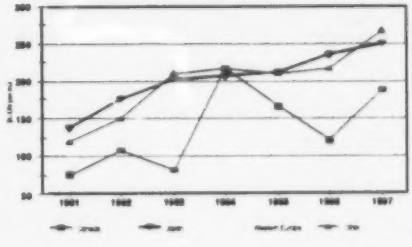
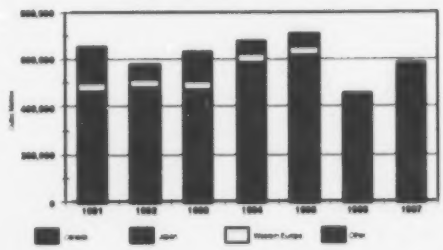
US Western Red Cedar Log Exports
(US Bureau of Census)



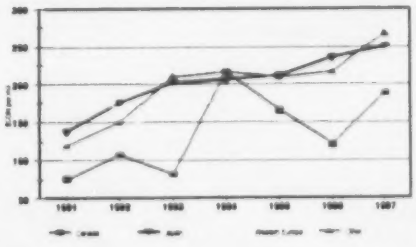
82

US "Other" Softwood Log Exports
(US Bureau of Census)



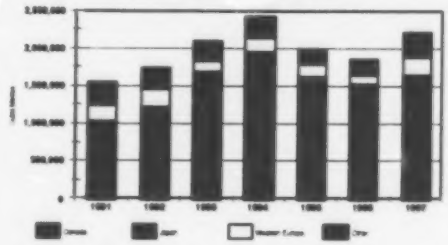
83

US "Other" Softwood Log Exports
(US Bureau of Census)



84

US Hardwood Log Exports
(US Bureau of Census)



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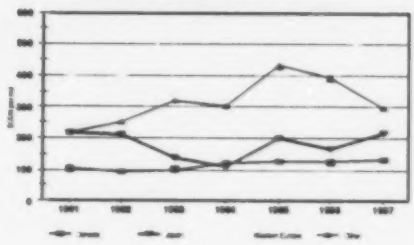
US Hardwood Log Exports
(US Bureau of Census)



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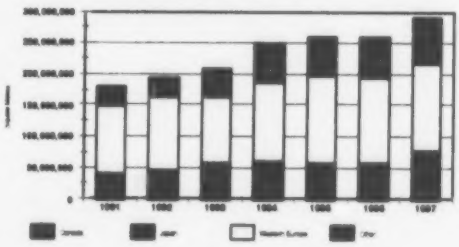
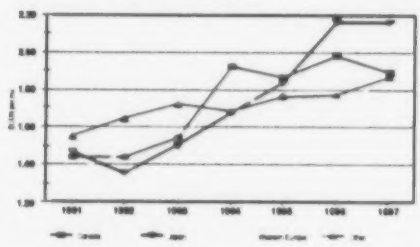
US Veneer Exports
(US Bureau of Census)



87

US Veneer Exports
(US Bureau of Census)



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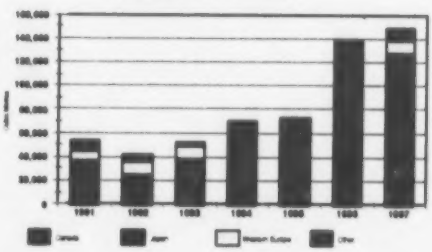
US OSB Exports
(US Bureau of Census)



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US OSB Exports
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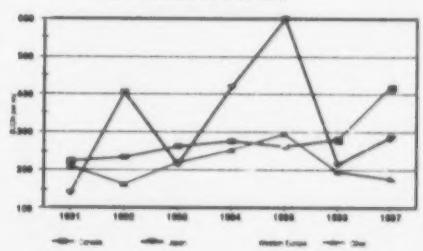

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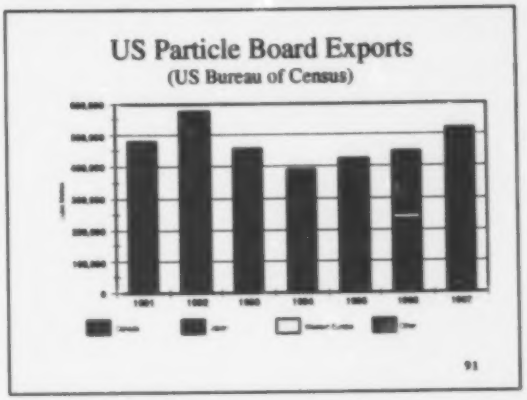
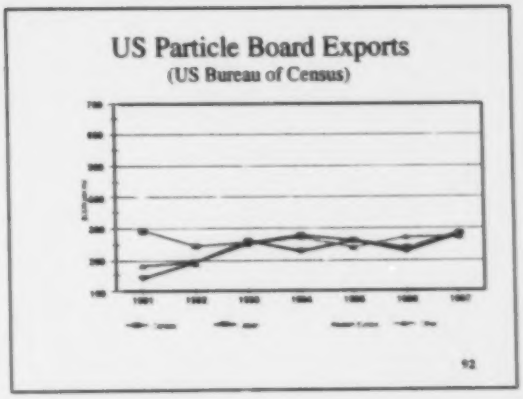

US Particle Board Exports
(US Bureau of Census)
91


US Particle Board Exports
(US Bureau of Census)
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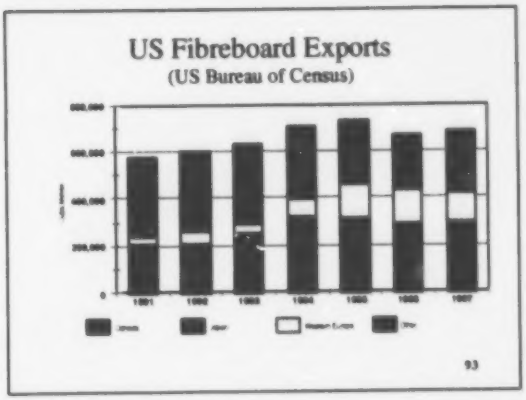
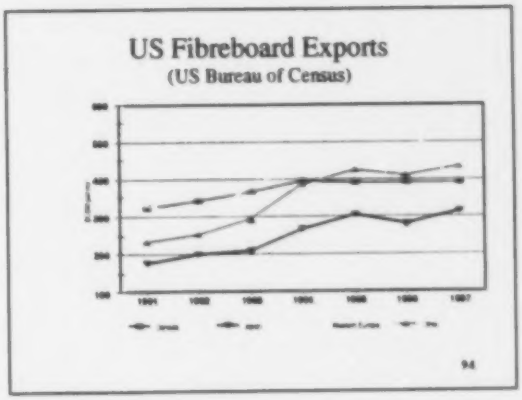

US Fibreboard Exports
(US Bureau of Census)
93


US Fibreboard Exports
(US Bureau of Census)
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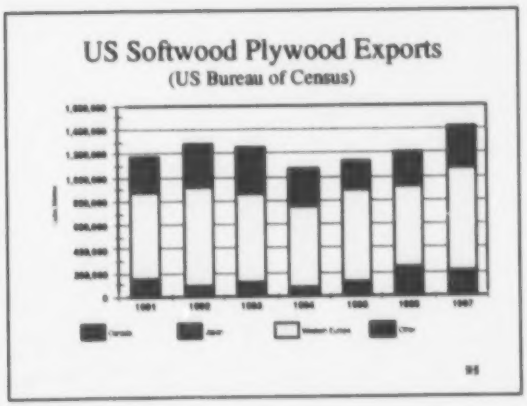
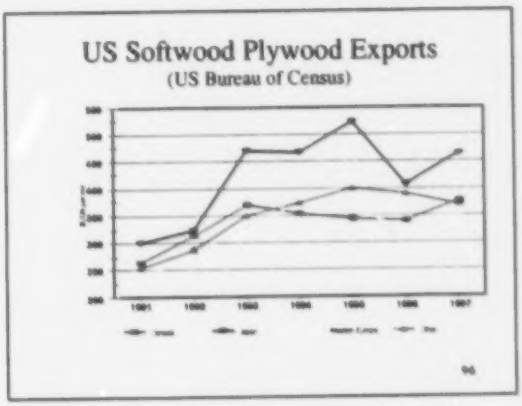
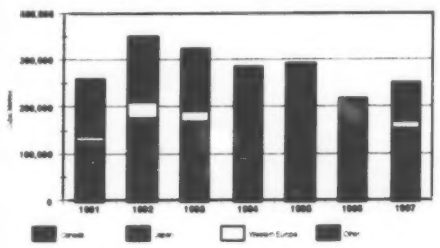

US Softwood Plywood Exports
(US Bureau of Census)
95


US Softwood Plywood Exports
(US Bureau of Census)
96

US Hardwood Plywood Exports
(US Bureau of Census)



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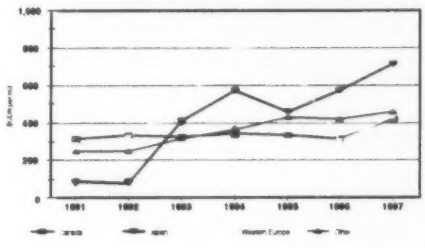
US Hardwood Plywood Exports
(US Bureau of Census)



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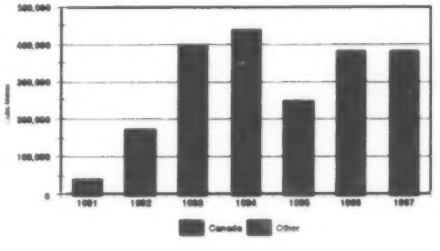
US Softwood Log Imports
(US Bureau of Census)



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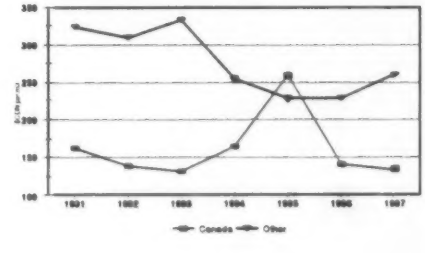
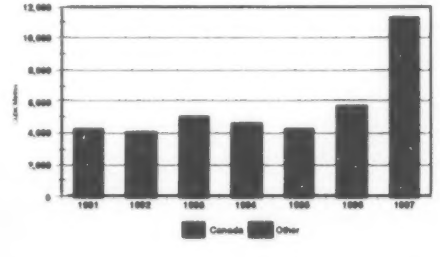
US Softwood Log Imports
(US Bureau of Census)



100

US Southern Yellow Pine Log Imports
(US Bureau of Census)



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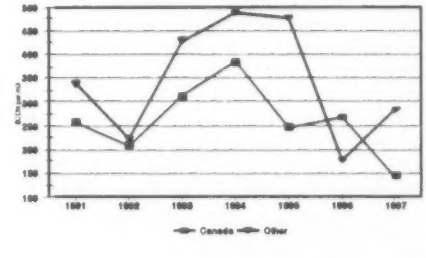
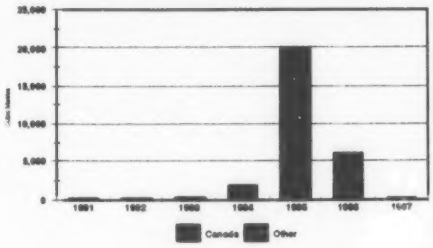
US Southern Yellow Pine Log Imports
(US Bureau of Census)



102

US Ponderosa Pine Log Imports
(US Bureau of Census)



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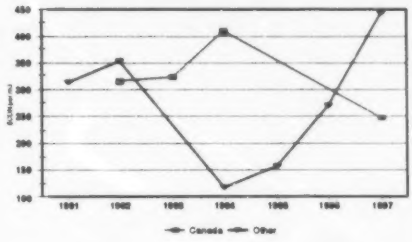
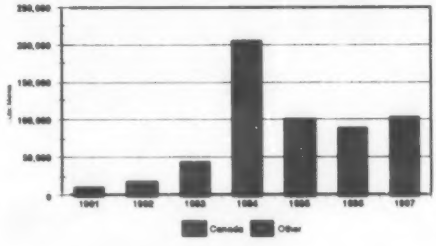
US Ponderosa Pine Log Imports
(US Bureau of Census)



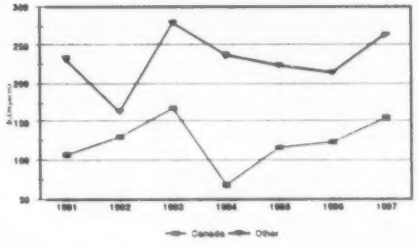
104

US Pine, "Other" Log Imports
(US Bureau of Census)



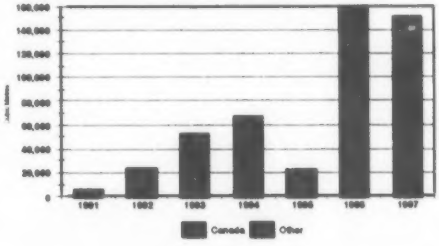
105

US Pine, "Other" Log Imports
(US Bureau of Census)



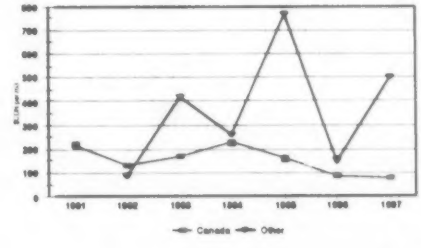
105

US Spruce Log Imports
(US Bureau of Census)



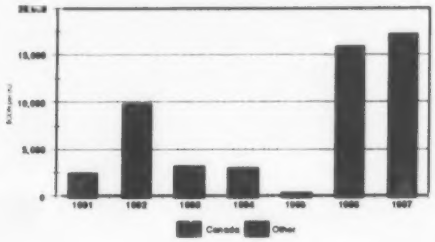
107

US Spruce Log Imports
(US Bureau of Census)



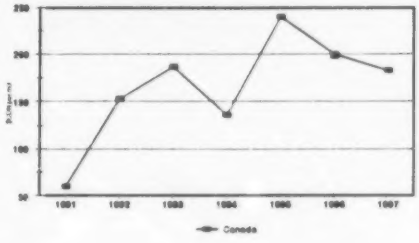
108

US Douglas-Fir Log Imports
(US Bureau of Census)



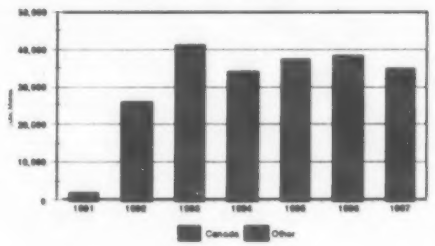
109

US Douglas-Fir Log Imports
(US Bureau of Census)



110

US Fir, "Other" Log Imports
(US Bureau of Census)



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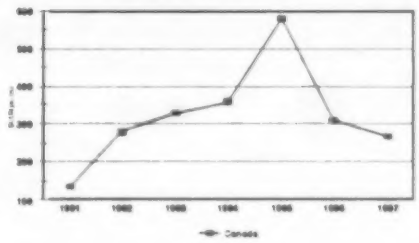
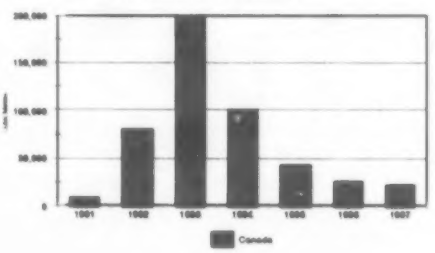


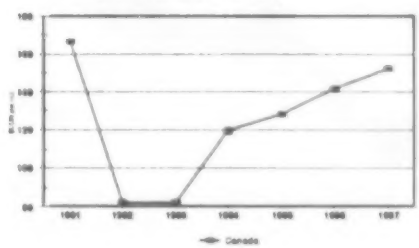
112

US Hemlock Log Imports
(US Bureau of Census)



113

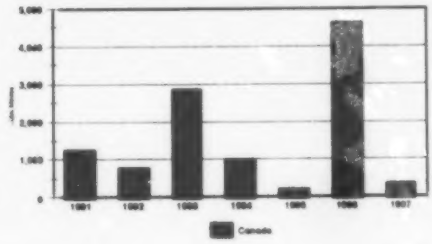
US Hemlock Log Imports
(US Bureau of Census)



114

US Western Red Cedar Log Imports

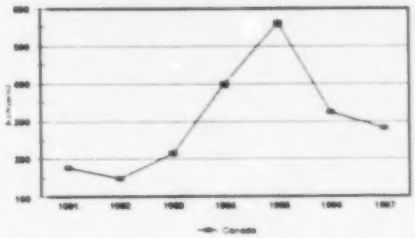
(US Bureau of Census)



115

US Western Red Cedar Log Imports

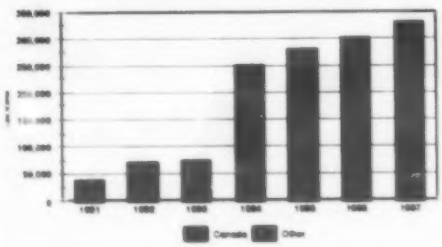
(US Bureau of Census)



116

US Western Red Cedar Log Imports

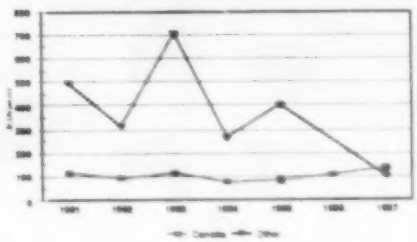
(US Bureau of Census)



117

US Western Red Cedar Log Imports

(US Bureau of Census)



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Appendix Two

Project Steering Committee

Mike Ainsworth	Ainsworth Lumber Co. Ltd.
Morris Douglas	Riverside Forest Products Limited
Mike Fortune	Kooteny School of Art
Joe Heath	West Fraser Timber Co. Ltd.
Bob Holm	BC Wood Specialties
Greg Jadrzyk	NFPA/SPF Working Group
Lowell Johnson	Northwood Pulp & Timber Limited
Roger Keery	TimberWest Forest Limited
Don Kayne	Canadian Forest Products Ltd.
Marcel Massie	Weldwood of Canada Limited
Ken McClelland	WRCLA
Ron Neilson	Forintek Canada Corp.
Paul Perkins	Weyerhaeuser Canada Ltd.
Mark Phillips	International Forest Products Limited
Ron Small	Vancouver Island Assoc. of Wood Processors
Terry Upgaard	Slocan Group
Lynn Embury-Williams	Canadian Forest Products Ltd.
Brian Zak	CFLA/Zairai Promotion Group